

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 3,1 A  
 Edition : 08.09.87  
 replaces : 07.84  
 Calibrating oil : ISO 4113  
 Injection pump : VA 4/100H1200 CR 145  
 -4  
 Type number : 0 460 304 237  
 Customer-specific information  
 Customer : STEYER  
 Engine : WD 408.43

## TEST BENCH REQUIREMENTS

Inlet press., bar : 0,2  
 Calibrating nozzle-holder  
 assembly : 1 688 901 020

Opening  
 pressure bar : 172...175

Perforated-plate  
 diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
 x Wall thickness : 2  
 x Length mm : 840

Start of delivery  
 Prestroke mm : 0,3  
 (from BDC) : +0,02 (0,04)

Injection-pump setting values  
 Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1000  
 Setting value mm: 3,4...4,2

## Supply-pump pressure:

Speed 1/min: 1000  
 Setting value bar: 4,7...5,2

## Full-load del. with charge press.:

Speed 1/min: 1180

A01

Del.quantity cm3/  
 1000H.: 65,0...66,0  
 Dispersion cm3/ : 2,0  
 1000H : -

## Low-idle speed regulation:

Speed 1/min: 250  
 Del.quantity cm3/  
 1000H.: 12,0...18,0  
 Dispersion cm3/ : 3,0  
 1000H.: -

## Full-load speed regulation:

Speed 1/min: 1270  
 Del.quantity cm3/  
 1000H.: 36,0...44,0

## Start:

Speed 1/min: 100  
 Del.quantity : -  
 mind cm3/1000H.: 80,0

## Inspection-pump test specifications Test specifications in parentheses

1st speed 1/min: 700  
 TD travel mm: 0,5...1,5  
 mm: (0,2...1,8)  
 2nd speed 1/min: 1000  
 TD travel mm: -  
 mm: (3,1...4,5)  
 3rd speed 1/min: 1140  
 TD travel mm: 5,1...5,8  
 mm: (4,8...6,1)

## Supply-pump pressure characteristic:

1st speed 1/min: 200  
 Supply-pump  
 pressure bar: 1,2...1,7  
 2nd speed 1/min: 1200  
 Supply-pump  
 pressure bar: 5,5...6,0

## Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Overflow : 55...97  
 quantity cm3/10s: (40...112)  
 2nd speed 1/min: 1200  
 Overflow : 55...97  
 quantity cm3/10s: (40...112)

## Delivery-quant. and breakaway char.:

1st speed 1/min: 1320

Del.quantity cm3/: -  
1000H.: -  
2nd speed 1/min: 1270  
Del.quantity cm3/: 36,0...44,0  
1000H.: (35,0...45,0)  
3rd speed 1/min: 1180  
Del.quantity cm3/: 65,0...66,0  
1000H.: (64,5...66,5)  
4th speed 1/min: 900  
Del.quantity cm3/: 69,0...71,0  
1000H.: (68,0...72,0)  
5th speed 1/min: 500  
Del.quantity cm3/: 62,0...65,0  
1000H.: (61,0...66,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200  
Del.quantity cm3/: -  
1000H.: -

Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 330  
Del.quantity cm3/: -  
1000H.: -  
2nd speed 1/min: 250  
Del.quantity cm3/: 12,0...18,0  
1000H.: (11,0...19,0)

Mounting and assembly dimensions:

Angles:  
Alpha ° : 25 +-4  
Beta ° : 40 +-8  
Gamma ° : 30 -8  
Delta ° : 60 + 8

Initial setting dimensions:

Dimension IV mm : 3,40  
Governor-spring washer thickness  
Dimension V mm : 24,65

Remarks:

Acceleration from start to full load  
with  $n = 170...250$  min.. -1

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,0 I4  
Edition : 03.11.87  
replaces : 09.85  
Calibrating oil : ISO-4113  
  
Injection pump : VE 5/10F2250 L150  
Type number : 0 460 405 033  
  
Customer-specific information  
Customer : VW  
  
Engine : 153 T

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,2  
(from BDC) : +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del.quantity cm3/  
1000H.: 43,5...44,5  
Dispersion cm3/ : 2,5  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 21,5...22,5

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 6,0...10,0

Full-load speed regulation:

Speed 1/min: 2525  
Charge press. hPa: 750  
Del.quantity cm3/  
1000H: 10,0...14,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm3/1000H.: 50,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 850  
Charge press. hPa: 750  
TD travel mm: 1,1...1,9  
mm: (0,8...2,2)

2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 3,1...3,5  
mm: (2,6...4,0)

3rd speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 5,4...6,2  
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3,2...3,8  
2nd speed 1/min: 1500

Charge press. hPa: 750  
Supply-pump  
pressure bar: 5,5...6,1  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 850  
Charge-air pressure-setting  
point hPa: 400  
LDA stroke mm: 3,6  
Del. quantity cm3/: 34,5...35,5  
1000H.: (32,0...38,0)  
2nd speed 1/min: 2700  
Charge press. hPa: 750  
Del. quantity cm3/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm3/: 10,0...14,0  
1000H.: (8,0...16,0)  
4th speed 1/min: 2425  
Charge press. hPa: 750  
Del. quantity cm3/: 23,0...33,0  
1000H.: (22,0...34,0)  
5th speed 1/min: 2250  
Charge press. hPa: 750  
Del. quantity cm3/: 37,0...39,0  
1000H.: (35,8...40,2)  
6th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/: 43,5...44,5  
1000H.: (41,8...46,2)  
7th speed 1/min: 850  
Charge press. hPa: 400  
Del. quantity cm3/: 34,5...35,5  
1000H.: (32,0...38,0)  
8th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: 21,5...22,5  
1000H.: (19,0...25,0)  
9th speed 1/min: 500  
Charge press. hPa: 750  
Del. quantity cm3/: 29,5...32,5  
1000H.: (28,0...34,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 450  
Del. quantity cm3/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm3/: -  
ind. 1000H.: 18,0  
3rd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: 5,0...25,0  
1000H.: -

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5,7...6,0  
MS mm : 1,7...1,9  
SVS max. mm : 4,2

Remarks:

:

Correction at adjusting nut (46)

Make TAS adjustment only at full  
manifold-pressure compensator  
pressure.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,0 IS  
Edition : 03.11.87  
replaces : 09.85  
Calibrating oil : ISO-4113

Injection pump : VE 5/10F2250 L150-1  
Type number : 0 460 405 034

Customer-specific information  
Customer : VW

Engine : 153 T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC): +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,1...3,5

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del.quantity cm3/  
1000H.: 43,5...44,5  
Dispersion cm3/ : 2,5  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 21,5...22,5

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 6,0...10,0

Full-load speed regulation:

Speed 1/min: 2525  
Charge press. hPa: 750  
Del.quantity cm3/  
1000H: 10,0...14,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm3/1000H.: 50,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 850  
Charge press. hPa: 750  
TD travel mm: 1,1...1,9  
mm: (0,8...2,2)

2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 3,1...3,5  
mm: (2,6...4,0)

3rd speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 5,4...6,2  
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 3,2...3,8  
2nd speed 1/min: 1500

Charge press. hPa: 750  
Supply-pump  
pressure bar: 5,5...6,1  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 850  
Charge-air pressure-setting  
point hPa: 400  
LDA stroke mm: 3,6  
Del. quantity cm3/: 34,5...35,5  
1000H.: (32,0...38,0)  
2nd speed 1/min: 2700  
Charge press. hPa: 750  
Del. quantity cm3/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm3/: 10,0...14,0  
1000H.: (8,0...16,0)  
4th speed 1/min: 2425  
Charge press. hPa: 750  
Del. quantity cm3/: 23,0...33,0  
1000H.: (22,0...34,0)  
5th speed 1/min: 2250  
Charge press. hPa: 750  
Del. quantity cm3/: 37,0...39,0  
1000H.: (35,8...40,2)  
6th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/: 43,5...44,5  
1000H.: (41,8...46,2)  
7th speed 1/min: 850  
Charge press. hPa: 400  
Del. quantity cm3/: 34,5...35,5  
1000H.: (32,0...38,0)  
8th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: 21,5...22,5  
1000H.: (19,0...25,0)  
9th speed 1/min: 500  
Charge press. hPa: 750  
Del. quantity cm3/: 29,5...32,5  
1000H.: (28,0...34,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2250  
Del. quantity cm3/: 0...3  
1000H.: -

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 450  
Del. quantity cm3/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm3/: -  
ind. 1000H: 18,0

3rd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: 5,0...25,0  
1000H.: -

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5,7...6,0  
MS mm : 1,7...1,9  
SVS max. mm : 4,2

Remarks:

:

Correction at adjusting nut (46)

Make TAS adjustment only at full  
manifold-pressure compensator

pressure.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4 M  
Edition : 04.11.87  
replaces : 19.12.86  
Calibrating oil : ISO-4113

Injection pump : VE 6/10F2150 L152  
Type number : 0 460 406 040

Customer-specific information  
Customer : VW

Engine : 087T-LT

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/  
1000H.: 41,5...42,5  
Dispersion cm3/ : 2,5  
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm3/  
1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del. quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2300  
Charge press. hPa: 750  
Del. quantity cm3/  
1000H.: 22,0...23,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm3/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 2,3...2,7  
mm: (1,8...3,2)  
3rd speed 1/min: 2150  
Charge press. hPa: 750  
TD travel mm: 4,4...5,2  
mm: (4,1...5,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750

Supply-pump  
pressure bar: 3,1...3,7  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5,5...6,1  
3rd speed 1/min: 2150  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2150  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750  
Charge-air pressure-setting  
point hPa: 300  
LDA stroke mm: 4,5  
Del. quantity cm3/: 32,5...33,5  
1000H.: (30,0...36,0)  
2nd speed 1/min: 2600  
Charge press. hPa: 750  
Del. quantity cm3/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 2400  
Charge press. hPa: 750  
Del. quantity cm3/: 10,0...14,0  
1000H.: (8,0...16,0)  
4th speed 1/min: 2300  
Charge press. hPa: 750  
Del. quantity cm3/: 17,5...27,5  
1000H.: (16,5...28,5)  
5th speed 1/min: 2150  
Charge press. hPa: 750  
Del. quantity cm3/: 35,0...37,0  
1000H.: (33,8...38,2)  
6th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/: 41,5...42,5  
1000H.: (39,8...44,2)  
7th speed 1/min: 750  
Charge press. hPa: 300  
Del. quantity cm3/: 32,5...33,5  
1000H.: (30,0...36,0)  
8th speed 1/min: 600  
Charge press. hPa: -  
Del. quantity cm3/: 23,5...24,5  
1000H.: (21,0...27,0)  
9th speed 1/min: 600  
Charge press. hPa: 750

Del. quantity cm3/: 35,5...38,5  
1000H: (34,0...40,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 450  
Del. quantity cm3/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm3/: -  
ind. 1000H: 25,0

2nd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: -  
max. 1000H : 27,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 6,3...6,6  
MS mm : 1,0...1,2  
SVS max. mm : 3,8  
FH mm : 1,8...2,4

Remarks:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 A  
Edition : 16.11.87  
replaces : 16.12.86  
Calibrating oil : ISO-4113

Injection pump : VE 6/10F1800 R209  
Type number : 0 460 406 048

Customer-specific information  
Customer : ONAN

Engine : L 634 T

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC): +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 58,5...59,5  
Dispersion cm<sup>3</sup>/  
1000H.: (4,0)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 44,0...45,0

Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,0...18,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1900  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 37,0...43,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1400

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1,4...2,2  
mm: (1,1...2,5)

2nd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)

3rd speed 1/min: 1800  
Charge press. hPa: 800  
TD travel mm: 5,8...6,6  
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 2,7...3,3  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 4,8...5,4  
 3rd speed 1/min: 1800  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 6,0...6,6

#### Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Overflow quantity cm3/10s: (41...83)  
 2nd speed 1/min: 1800  
 Charge press. hPa: 800  
 Overflow quantity cm3/10s: (55...138)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting point hPa: 200  
 LDA stroke mm: 6,5  
 Del. quantity cm3/ 1000H.: (47,0...48,0)  
 2nd speed 1/min: 2050  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (0,0...3,0)  
 3rd speed 1/min: 2000  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (5,5...14,5)  
 4th speed 1/min: 1950  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (23,0...31,0)  
 5th speed 1/min: 1900  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (37,0...43,0)  
 6th speed 1/min: 1800  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (51,5...54,5)  
 7th speed 1/min: 1400  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (58,5...59,5)  
 8th speed 1/min: 700  
 Charge press. hPa: 800  
 Del. quantity cm3/ 1000H.: (58,0...61,0)

9th speed 1/min: 700  
 Charge press. hPa: -  
 Del. quantity cm3/ 1000H.: (44,0...45,0)  
 1000H.: (42,2...46,8)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 1800  
 Del. quantity cm3/ 1000H.: 0..3

#### Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del. quantity cm3/ 1000H.: (0,0...3,0)  
 max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 400  
 Del. quantity cm3/ 1000H.: (14,0...18,0)  
 2nd speed 1/min: 450  
 Del. quantity cm3/ 1000H.: (0,0...6,0)  
 3rd speed 1/min: 350  
 Del. quantity cm3/ 1000H.: (26,5...33,5)

#### Automatic starting fuel delivery:

1st speed 1/min: 220  
 Del. quantity cm3/ ind. 1000H.: 42,0  
 2nd speed 1/min: 300  
 Del. quantity cm3/ max. 1000H.: 42,0

#### Shutoff electromagnet:

Cut-in min. voltage : 10,0  
 Rated voltage : 12,0

#### Mounting and assembly dimensions:

#### Designation

K	mm	:	-
KF	mm	:	5,7...6,0
MS	mm	:	1,3...1,55
SVS max.	mm	:	1,4

#### Remarks:

Correction at adjusting nut (46)



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 B  
Edition : 16.11.87  
replaces : 16.12.86  
Calibrating oil : ISO-4113

Injection pump : VE 6/10F1400 R209-1  
Type number : O 460 406 052

Customer-specific information  
Customer : ONAN

Engine : L 634 T

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC): +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 800  
Setting value mm: 2,8...3,2

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 800  
Setting value bar: 3,8...4,4

Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 800  
Del. quantity cm3/  
1000H.: 61,0...62,0  
Dispersion cm3/ : 3,0  
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm3/  
1000H.: 44,5...45,5

Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm3/  
1000H.: 14,0...18,0  
Dispersion cm3/ : 3,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1480  
Charge press. hPa: 800  
Del. quantity cm3/  
1000H.: 42,0...46,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm3/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1100

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1,4...2,2  
mm: (1,1...2,5)  
2nd speed 1/min: 1100  
Charge press. hPa: 800  
TD travel mm: 2,8...3,2  
mm: (2,3...3,7)  
3rd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4,2...4,8  
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 800  
Supply-pump pressure bar: 2,3...2,9  
2nd speed 1/min: 1100  
Charge press. hPa: 800  
Supply-pump pressure bar: 3,8...4,4  
3rd speed 1/min: 1400  
Charge press. hPa: 800  
Supply-pump pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 800  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 800  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 200  
LDA stroke mm: 6,5  
Del. quantity cm3/ : 47,0...48,0  
1000H.: (45,2...49,8)  
2nd speed 1/min: 1600  
Charge press. hPa: 800  
Del. quantity cm3/ : 0,0...6,0  
1000H.: -  
3rd speed 1/min: 1560  
Charge press. hPa: 800  
Del. quantity cm3/ : 14,0...22,0  
1000H.: -  
4th speed 1/min: 1480  
Charge press. hPa: 800  
Del. quantity cm3/ : 42,0...46,0  
1000H.: (40,0...48,0)  
5th speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm3/ : 56,5...59,5  
1000H.: (55,7...60,3)  
6th speed 1/min: 1100  
Charge press. hPa: 800  
Del. quantity cm3/ : 61,0...62,0  
1000H.: (59,2...63,8)  
7th speed 1/min: 700  
Charge press. hPa: 800  
Del. quantity cm3/ : 58,0...60,0  
1000H.: -  
8th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm3/ : 44,5...45,5  
1000H.: (42,7...47,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del.quantity cm3/: 14,0..18,0  
1000H.: 12,0...20,0  
2nd speed 1/min: 450  
Del.quantity cm3/: 0,0...6,0  
1000H.: -  
3rd speed 1/min: 350  
Del.quantity cm3/: 26,5..33,5  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 220  
Del.quantity cm3/: -  
ind. 1000H: 42,0

2nd speed 1/min: 300  
Del.quantity cm3/: -  
max. 1000H : 42,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5,7...6,0  
MS mm : 1,3..1,55  
SVS max. mm : 1,6

Remarks:

:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 F  
Edition : 16.11.87  
replaces : -  
Calibrating oil : ISO-4113

Injection pump : VE 4/11F1900 R217 B  
Type number : O 460 414 027

Customer-specific information  
Customer : VOLVO-PENTA

Engine : TAMD 31

Power k: 95

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : 0,3  
(from BDC): +/-0,02 (0,04)

Indicator setting:  
Piston stroke mm: 1.66  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 2,3...2,7

## Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value bar: 6,1...6,7

## Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 93,5...94,5  
Dispersion cm<sup>3</sup>/  
1000H.: (5,0)

## Full-load del. w/out charge press.:

Speed 1/min : 650  
Del. quantity cm<sup>3</sup>/  
1000H.: 58,5...59,5

## Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 23,0...27,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,5)

## Full-load speed regulation:

Speed 1/min: 2100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,5...20,5

## Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 95,0

## Inspection-pump test specifications Test specifications in parentheses

1st speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
TD travel mm: 2,3...2,7  
mm: (1,8...3,2)  
3rd speed 1/min: 1900  
Charge press. hPa: 1000  
TD travel mm: 4,1...4,9  
mm: (3,8...5,2)

## Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3,4...4,0  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6,1...6,7  
3rd speed 1/min: 1900  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,5...8,1

## Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 1000  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

## Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
Charge-air pressure-setting point hPa: 300  
LDA stroke mm: 6,4  
Del. quantity cm<sup>3</sup>/  
1000H.: (84,0...85,0)  
2nd speed 1/min: 2200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 0,0...3,0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: (13,5...21,5)  
4th speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: (85,0...88,0)  
5th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: (83,5...89,5)  
6th speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: (93,5...94,5)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: (91,7...96,3)  
8th speed 1/min: 650  
Charge press. hPa: -

Del.quantity cm3/: 58,5...59,5  
1000H: (56,7...61,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1900  
Del.quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del.quantity cm3/: 23,0...27,0  
1000H.: (20,0...30,0)  
2nd speed 1/min: 400  
Del.quantity cm3/: 7,0...13,0  
1000H.: (5,5...14,5)  
3rd speed 1/min: 480  
Del.quantity cm3/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del.quantity cm3/: -  
ind. 1000H: 74,0

2nd speed 1/min: 540  
Del.quantity cm3/: -  
max. 1000H : 72,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : 5,1...5,4  
MS mm : 0,9...1,15  
SVS max. mm : 4,1

Remarks:

:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 L5  
Edition : 04.11.87  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE 6/12F1250 R173-9  
Type number : 0 460 426 102  
  
Customer-specific information  
Customer : CUMMINS  
  
Engine : 6 BTA -590 IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 027  
  
Opening  
pressure bar : 250...253  
  
Perforated-plate  
diameter mm : 0.5  
  
Test inj. tubing : 1 688 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +/-0,02 (0,04)  
  
Start of delivery block  
Piston stroke mm : 1,85  
mm : +/-0,02 (0,06)  
  
Outlet : D  
  
Injection-pump setting values  
Test specifications in parentheses  
  
Timing-device travel:  
  
Speed 1/min: 750  
Charge press. hPa: 1000

A20

Setting value mm: 1,3...1,7

Supply-pump pressure:

Speed 1/min: 750  
Charge press. hPa: 1000  
Setting value bar: 3,2...3,8

Full-load del. with charge press.:

Speed 1/min: 750  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 84,5...85,5  
Dispersion cm3/ : 4,0  
1000H.: (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del.quantity cm3/  
1000H.: 68,5...69,5

Low-idle speed regulation:

Speed 1/min: 375  
Charge press. hPa: -  
Del.quantity cm3/  
1000H.: 8,0...14,0  
Dispersion cm3/ : 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1300  
Charge press. hPa: 1000  
Del.quantity cm3/  
1000H.: 59,0...65,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del.quantity : -  
mind cm3/1000H.: 70,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 600  
Charge press. hPa: 1000  
TD travel mm: 0,4...1,2  
mm: (0,1...1,5)  
  
2nd speed 1/min: 750  
Charge press. hPa: 1000  
TD travel mm: 1,3...1,7  
mm: (0,8...2,2)  
  
3rd speed 1/min: 1050  
Charge press. hPa: 1000

TD travel           mm: 2,0...2,8  
                  mm: (1,7...3,1)

#### Supply-pump pressure characteristic:

1st speed       1/min: 500  
Charge press.   hPa: 1000  
Supply-pump  
  pressure       bar: 2,2...2,8  
2nd speed       1/min: 750  
Charge press.   hPa: 1000  
Supply-pump  
  pressure       bar: 3,2...3,8  
3rd speed       1/min: 1050  
Charge press.   hPa: 1000  
Supply-pump  
  pressure       bar: 4,5...5,1

#### Overflow quantity at overflow valve:

1st speed       1/min: 500  
Charge press.   hPa: -  
Overflow         : 41...83  
  quantity       cm3/10s: (26...98)  
2nd speed       1/min: 1250  
Charge press.   hPa: 1000  
Overflow         : 55...138  
  quantity       cm3/10s: (40...153)

#### Delivery-quant. and breakaway char.:

1st speed       1/min: 700  
Charge-air pressure-setting  
  point          hPa: 400  
LDA stroke       mm: 4,5  
Del. quantity   cm3/: 77,5...78,5  
                 1000H.: (74,0...82,0)  
2nd speed       1/min: 1400  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 0,0...3,0  
                 1000H.: -  
3rd speed       1/min: 1370  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 0,0...15,0  
                 1000H.: -  
4th speed       1/min: 1330  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 15,0...55,0  
                 1000H.: -  
5th speed       1/min: 1300  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 59,0...65,0  
                 1000H.: (56,0...68,0)  
6th speed       1/min: 1250  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 76,0...79,0  
                 1000H.: (74,5...80,5)  
7th speed       1/min: 1050  
Charge press.   hPa: 1000

Del. quantity   cm3/: 80,5...83,5  
                 1000H.: (78,5...85,5)  
8th speed       1/min: 750  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 84,5...85,5  
                 1000H.: (82,0...88,0)  
9th speed       1/min: 700  
Charge press.   hPa: 400  
Del. quantity   cm3/: 77,5...78,5  
                 1000H.: (74,0...82,0)  
10th speed       1/min: 500  
Charge press.   hPa: -  
Del. quantity   cm3/: 68,5...69,5  
                 1000H.: (65,0...73,0)  
11th speed       1/min: 500  
Charge press.   hPa: 1000  
Del. quantity   cm3/: 84,0...92,0  
                 1000H.: -

#### Zero delivery (stop):

#### Mech. shutoff:

Speed           1/min: 1250  
Del. quantity   cm3/: 0...3  
                 1000H.: -

#### Electr. shutoff:

Speed           1/min: 375  
ELAB            volt: -  
Del. quantity   cm3/: 0,0...3,0  
max.            1000H.: -

#### Idle delivery:

1st speed       1/min: 375  
Del. quantity   cm3/: 8,0...14,0  
                 1000H.: (6,0...16,0)  
2nd speed       1/min: 500  
Del. quantity   cm3/: 0,0...4,0  
                 1000H.: -

#### Automatic starting fuel delivery:

1st speed       1/min: 250  
Del. quantity   cm3/: -  
  ind.           1000H: 70,0

2nd speed       1/min: 400  
Del. quantity   cm3/: -  
max.            1000H : 70,0

#### Shutoff electromagnet:

Cut-in  
  min. voltage       : 10,0  
  Rated voltage      : 12,0

#### Mounting and assembly dimensions:



Designation

K	mm	:	-
KF	mm	:	5,1...5,4
MS	mm	:	1,1...1,35
SVS max.	mm	:	2,0
XK	mm	:	18,8...20,8
XL	mm	:	13,8...17,2

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,7 A  
Edition : 04.11.87  
replaces : 16.12.86  
Calibrating oil : ISO-4113  
  
Injection pump : VE 4/ 8F2300 R171  
Type number : 0 460 484 010  
  
Customer-specific information  
Customer : PEUGEOT  
  
Engine : XUD7

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 3,4...3,88

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 28,0...29,0  
Dispersion cm3/: 2,0  
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 8,0...12,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)  
Residual-Delivery Setting  
Speed 1/min: 550  
Del.quantity cm3/  
1000H.: 3,5...4,5

Full-load speed regulation:

Speed 1/min: 2440  
Del.quantity cm3/  
1000H: 19,0...25,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 800  
TD travel mm: 0,8...1,6  
mm: (0,5...1,9)  
2nd speed 1/min: 1250  
TD travel mm: 3,4...3,8  
mm: (2,9...4,3)  
3rd speed 1/min: 2000  
TD travel mm: 7,5...8,3  
mm: (7,2...8,6)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3,0...3,6  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4,3...4,9  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6,4...7,0

# Overflow quantity at overflow valve:

1st speed 1/min: 500  
Oveflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm3/10s: (40...153)

# Delivery-quant. and breakaway char.:

1st speed 1/min: 2690  
Del.quantity cm3/: 3,5...10,5  
1000H.: -  
2nd speed 1/min: 2540  
Del.quantity cm3/: 11,5...17,5  
1000H.: (10,0...19,0)  
3rd speed 1/min: 2440  
Del.quantity cm3/: 19,0...25,0  
1000H.: (18,0...26,0)  
4th speed 1/min: 2250  
Del.quantity cm3/: 27,0...29,0  
1000H.: (25,7...30,3)  
5th speed 1/min: 2000  
Del.quantity cm3/: 27,5...29,5  
1000H.: (26,2...30,8)  
6th speed 1/min: 1250  
Del.quantity cm3/: 28,0...29,0  
1000H.: (26,2...30,8)  
7th speed 1/min: 800  
Del.quantity cm3/: 28,0...30,0  
1000H.: (26,0...32,0)  
8th speed 1/min: 500  
Del.quantity cm3/: 28,0...31,0  
1000H.: (26,5...32,5)

# Zero delivery (stop):

# Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del.quantity cm3/: -  
max. 1000H.: -

# Idle delivery:

1st speed 1/min: 375  
Del.quantity cm3/: 8,0...12,0  
1000H.: (6,0...14,0)

# High Idle:

Speed 1/min: 450  
Del.quantity cm3/: 8,0...12,0  
1000H.: (6,0...14,0)

# Residual:

Speed 1/min: 550  
Del.quantity : 3,5...4,5  
1000H.: (2,5...5,5)

# Automatic starting fuel delivery:

1st speed 1/min: 200  
Del.quantity cm3/: -  
ind. 1000H: 34,0

2nd speed 1/min: 300  
Del.quantity cm3/: -  
max. 1000H : 64,0

# Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

# Mounting and assembly dimensions:

# Designation

K	mm	: 3,2...3,4
KF	mm	: 5,2...5,5
MS	mm	: 1,3...1,5
SVS max.	mm	: 3,0
XK	mm	: 18,9...20,9
XL	mm	: 12,2...15,6

# Remarks:

:

# Setting of residual delivery.

Idle setting (LFG) according to  
VDT-I-460/135.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,7 A1  
 Edition : 04.11.87  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE 4/ 8F2300 R171-1  
 Type number : O 460 484 014  
 Customer-specific information  
 Customer : PEUGEOT  
 Engine : XUD7

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40...48  
 electronically : 42...50  
 Inlet press., bar : 0,35  
 Calibrating nozzle-holder  
 assembly : 1 688 901 022

Opening  
 pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
 x Wall thickness : 2  
 x Length mm : 450

Start of delivery  
 Prestroke mm : -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
 Setting value mm: 3,4...3,88

Supply-pump pressure:

Speed 1/min: 1250  
 Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 1250  
 Del.quantity cm3/  
 1000H.: 28,0...29,0  
 Dispersion cm3/: 2,0  
 1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 375  
 Del.quantity cm3/  
 1000H.: 8,0...12,0  
 Dispersion cm3/: 2,0  
 1000H.: (3,0)  
 Residual-Delivery Setting  
 Speed 1/min: 550  
 Del.quantity cm3/  
 1000H.: 3,5...4,5

Full-load speed regulation:

Speed 1/min: 2400  
 Del.quantity cm3/  
 1000H: 19,0...25,0

Start:

Speed 1/min: 100  
 Del.quantity : -  
 mind cm3/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
 Test specifications in parentheses

1st speed 1/min: 800  
 TD travel mm: 0,8...1,6  
 mm: (0,5...1,9)  
 2nd speed 1/min: 1250  
 TD travel mm: 3,4...3,8  
 mm: (2,9...4,3)  
 3rd speed 1/min: 2000  
 TD travel mm: 7,5...8,3  
 mm: (7,2...8,6)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Supply-pump  
 pressure bar: 3,0...3,6  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4,3...4,9  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650  
Del. quantity cm3/: 3,5...10,5  
1000H.: -  
2nd speed 1/min: 2500  
Del. quantity cm3/: 11,5...17,5  
1000H.: (11,0...18,0)  
3rd speed 1/min: 2400  
Del. quantity cm3/: 19,0...25,0  
1000H.: (18,5...25,5)  
4th speed 1/min: 2250  
Del. quantity cm3/: 27,0...29,0  
1000H.: (25,7...30,3)  
5th speed 1/min: 2000  
Del. quantity cm3/: 27,5...29,5  
1000H.: (26,2...30,8)  
6th speed 1/min: 1250  
Del. quantity cm3/: 28,0...29,0  
1000H.: (26,2...30,8)  
7th speed 1/min: 800  
Del. quantity cm3/: 28,0...30,0  
1000H.: (26,0...32,0)  
8th speed 1/min: 500  
Del. quantity cm3/: 28,0...31,0  
1000H.: (26,5...32,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del. quantity cm3/: -  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 8,0...12,0  
1000H.: (6,0...14,0)

High Idle:

Speed 1/min: 450  
Del. quantity cm3/: 8,0...12,0  
1000H.: (6,0...14,0)

Residual:

Speed 1/min: 550  
Del. quantity : 3,5...4,5  
1000H.: (2,5...5,5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del. quantity cm3/: -  
ind. 1000H: 34,0

2nd speed 1/min: 300  
Del. quantity cm3/: -  
max. 1000H : 64,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,2...5,5  
MS mm : 1,3...1,5  
SVS max. mm : 3,0  
XK mm : 18,9...20,9  
XL mm : 12,2...15,6

Remarks:

Setting of residual delivery.

Idle setting (LFG) according to  
VDT-I-460/135.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6U  
Edition : 2.11.87  
replaces : 4.84  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2100 R48  
Type number : 0 460 494 039  
  
Customer-specific information  
Customer : VW  
  
Engine : EA 162/1,6L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0.35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,8...5,4

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 33,0...34,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 415  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2300  
Del.quantity cm3/  
1000H: 12,5...16,5

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,4...2,2  
mm: (1,1...2,5)  
2nd speed 1/min: 1500  
TD travel mm: 3,3...3,7  
mm: (2,8...4,2)  
3rd speed 1/min: 2100  
TD travel mm: 5,4...6,2  
mm: (5,1...6,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,6...3,2  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 4,8...5,4  
3rd speed 1/min: 2100  
Supply-pump  
pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...111  
quantity cm3/10s: (26...126)  
2nd speed 1/min: 2100  
Overflow : 55...138  
quantity cm3/10s: (40...153)

### Delivery-quant. and breakaway char.:

1st speed 1/min: 2450  
Del. quantity cm<sup>3</sup>/: 0...6,0  
1000H.: -  
2nd speed 1/min: 2300  
Del. quantity cm<sup>3</sup>/: 12,5...16,5  
1000H.: (10,5...18,5)  
3rd speed 1/min: 2200  
Del. quantity cm<sup>3</sup>/: 20,0...30,0  
1000H.: (19,0...31,0)  
4th speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/: 28,0...30,0  
1000H.: (26,8...31,2)  
5th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 33,0...34,0  
1000H.: (31,3...35,7)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 21,5...24,5  
1000H.: (20,0...26,0)

### Zero delivery (stop):

### Electr. shutoff:

Speed 1/min: 415  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0...3,0  
max. 1000H.: -

### Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 415  
Del. quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 650  
Del. quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -  
3rd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

### Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 17,0  
2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 23,0

### Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

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### Mounting and assembly dimensions:

#### Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...5,9
MS	mm	: 1,3...1,5
SVS max.	mm	: 4,8
FH	mm	: 1,8...2,4
XK	mm	: 18,6...20,6
XL	mm	: 7,5...10,8

#### Remarks:

:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6A  
Edition : 3.11.87  
replaces : 2.10.87  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2400 R125  
Type number : O 460 494 122  
  
Customer-specific information  
Customer : FORD  
  
Engine : 1,6L IDI

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 5,0...5,4  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5,3...5,9



KSB solenoid-operated  
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750  
Del.quantity cm3/  
1000H.: 28,8...29,8  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,5  
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 440  
Del.quantity cm3/  
1000H.: 7,0...11,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,0  
1000H.: (2,0)

Full-load speed regulation:

Speed 1/min: 2675  
Del.quantity cm3/  
1000H.: 7,5...13,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 50,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 600  
TD travel mm: 2,2...4,2  
mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 800  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1500  
TD travel mm: 5,0...5,4  
mm: (4,5...5,9)  
KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 2000  
TD travel mm: 7,6...8,4  
mm: (7,3...8,7)

KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3,1...3,7  
KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 5,3...5,9  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6,6...7,2  
KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2400  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 0,0...2,0  
1000H.: -  
2nd speed 1/min: 2675  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 7,5...13,5  
1000H.: (6,5...14,5)  
3rd speed 1/min: 2550  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 18,5...26,5  
1000H.: (17,5...27,5)  
4th speed 1/min: 2400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 27,2...29,2  
1000H.: (26,0...30,4)  
5th speed 1/min: 1750  
KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 28,8...29,8  
1000H.: (27,1...31,5)  
6th speed 1/min: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 24,1...27,1  
1000H.: (23,4...27,8)  
7th speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 23,0...26,0  
1000H.: (21,5...27,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 440  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 440  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 7,0...11,0  
1000H.: (5,0...13,0)

2nd speed 1/min: 475  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 2,5...7,5  
1000H.: (0,5...9,5)

3rd speed 1/min: 570  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 0,0...3,6  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: -  
ind. 1000H: 30,0

2nd speed 1/min: 500  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: -  
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

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Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,6...1,85
SVS max.	mm	: 4,0
XK	mm	: 23,3...25,3
XL	mm	: 10,4...13,8

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 K2  
Edition : 04.11.87  
replaces :  
Calibrating oil : ISO-4113  
Injection pump : VE 4/ 9F2300 R162-4  
Type number : 0 460 494 124  
Customer-specific information  
Customer : PEUGEOT  
Engine : XUD9

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
Inlet press., bar : 0,35  
Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 29,5...30,5  
Dispersion cm3/: 2,5  
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 7,0...9,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)  
Residual-Delivery Setting  
Speed 1/min: 550  
Del.quantity cm3/  
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2400  
Del.quantity cm3/  
1000H.: 20,0...26,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 24,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 800  
TD travel mm: 1,5...2,3  
mm: (1,2...2,6)  
2nd speed 1/min: 1250  
TD travel mm: 4,0...4,4  
mm: (3,5...4,9)  
3rd speed 1/min: 2000  
TD travel mm: 7,6...8,4  
mm: (7,3...8,7)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 3,0...3,6  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4,2...4,8  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650  
Del. quantity cm3/: 0,0...7,0  
1000H.: -  
2nd speed 1/min: 2500  
Del. quantity cm3/: 10,0...16,0  
1000H.: (9,0...17,0)  
3rd speed 1/min: 2400  
Del. quantity cm3/: 20,0...26,0  
1000H.: (19,0...27,0)  
4th speed 1/min: 2250  
Del. quantity cm3/: 30,7...32,7  
1000H.: (29,7...33,7)  
5th speed 1/min: 2000  
Del. quantity cm3/: 31,6...33,6  
1000H.: (30,6...34,6)  
6th speed 1/min: 1250  
Del. quantity cm3/: 29,5...30,5  
1000H.: (28,0...32,0)  
7th speed 1/min: 800  
Del. quantity cm3/: 29,7...32,3  
1000H.: (29,0...33,0)  
8th speed 1/min: 500  
Del. quantity cm3/: 30,0...33,0  
1000H.: (29,5...33,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del. quantity cm3/: -  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 7,0...9,0  
1000H.: (4,0...12,0)

High Idle:

Speed 1/min: 470  
Del. quantity cm3/: 7,0...9,0  
1000H.: (4,0...12,0)

Residual:

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Speed 1/min: 550  
Del. quantity : 2,5...3,5  
1000H.: (1,0...5,0)

Arrangement of drivers on engine-  
speed lever for exhaust-gas-  
recirculation valve linkage (guage)

1st speed 1/min: 1125  
Del. quantity cm3/: 17,0...19,0  
1000H.: (15,5...20,5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del. quantity cm3/: -  
ind. 1000H: 20,0

2nd speed 1/min: 300  
Del. quantity cm3/: -  
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,7...6,0  
MS mm : 1,3...1,55  
XK mm : 17,0...19,0  
XL mm : 14,2...17,6

Remarks:

Setting of residual delivery.

Idle setting (LFG) according to  
VDT-I-460/135.

For adjustment of switching point  
(EGR valve), include 10.8 mm spacer  
at third fuel-delivery stop.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 V9  
Edition : 03.11.87  
replaces : 09.85  
Calibrating oil : ISO-4113  
Injection pump : VE 4/ 9F2400 R138  
Type number : 0 460 494 131

Customer-specific information  
Customer : VW

Engine : 086-1,6L.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,3...4,9

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,5...32,5  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 475  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2600  
Del.quantity cm3/  
1000H.: 12,0...16,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
2nd speed 1/min: 1500  
TD travel mm: 2,9...3,3  
mm: (2,4...3,8)  
3rd speed 1/min: 2400  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,2...2,8  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 4,3...4,9  
3rd speed 1/min: 2400  
Supply-pump  
pressure bar: 6,4...7,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2400  
Overflow : 55...138  
quantity cm3/10s: (40...153)

# Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del.quantity cm3/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 2600  
Del.quantity cm3/: 12,0...16,0  
1000H.: (10,0...18,0)  
3rd speed 1/min: 2525  
Del.quantity cm3/: 18,5...28,5  
1000H.: (17,5...29,5)  
4th speed 1/min: 2400  
Del.quantity cm3/: 26,8...28,8  
1000H.: (25,6...30,0)  
5th speed 1/min: 1500  
Del.quantity cm3/: 31,5...32,5  
1000H.: (29,8...34,2)  
6th speed 1/min: 600  
Del.quantity cm3/: 20,2...23,2  
1000H.: (18,7...24,7)

# Zero delivery (stop):

# Electr. shutoff:

Speed 1/min: 475  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

# Idle delivery:

1st speed 1/min: 475  
Del.quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 650  
Del.quantity cm3/: 0,0...7,6  
1000H.: -  
3rd speed 1/min: 1200  
Del.quantity cm3/: 0,0...5,0  
1000H.: -

# Automatic starting fuel delivery:

1st speed 1/min: 400  
Del.quantity cm3/: -  
ind. 1000H: 18,0

2nd speed 1/min: 500  
Del.quantity cm3/: -  
max. 1000H : 23,5

# Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

# Mounting and assembly dimensions:

# Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
NS	mm	: 1,3...1,5
SVS max.	mm	: 2,7
FH	mm	: 1,8...2,4
XK	mm	: 17,0...19,0
XL	mm	: 9,8...13,2

# Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W2  
Edition : 03.11.87  
replaces : 09.85  
Calibrating oil : ISO-4113  
  
Injection pump : VE 4/ 9F2400 R138-1  
Type number : O 460 494 140  
  
Customer-specific information  
Customer : VW  
  
Engine : 086-1,6L.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : -  
(from BDC): -  
  
Injection-pump setting values  
Test specifications in parentheses  
  
Timing-device travel:  
  
Speed 1/min: 1500  
Setting value mm: 2,9...3,3  
  
Supply-pump pressure:  
  
Speed 1/min: 1500  
Setting value bar: 4,3...4,9  
  
Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,5...32,5  
Dispersion cm3/: 2,5  
1000H.: (3,0)

#### Low-idle speed regulation:

Speed 1/min: 450  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)

#### Full-load speed regulation:

Speed 1/min: 2600  
Del.quantity cm3/  
1000H.: 12,0...16,0

#### Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35,0

#### Inspection-pump test specifications Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
2nd speed 1/min: 1500  
TD travel mm: 2,9...3,3  
mm: (2,4...3,8)  
3rd speed 1/min: 2400  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

#### Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump pressure bar: 2,2...2,8  
2nd speed 1/min: 1500  
Supply-pump pressure bar: 4,3...4,9  
3rd speed 1/min: 2400  
Supply-pump pressure bar: 6,4...7,0

#### Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow quantity cm3/10s: 41...83  
(26...98)  
2nd speed 1/min: 2400  
Overflow quantity cm3/10s: 55...138  
(40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del.quantity cm3/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 2600  
Del.quantity cm3/: 12,0...16,0  
1000H.: (10,0...18,0)  
3rd speed 1/min: 2525  
Del.quantity cm3/: 18,5...28,5  
1000H.: (17,5...29,5)  
4th speed 1/min: 2400  
Del.quantity cm3/: 26,8...28,8  
1000H.: (25,6...30,0)  
5th speed 1/min: 1500  
Del.quantity cm3/: 31,5...32,5  
1000H.: (29,8...34,2)  
6th speed 1/min: 600  
Del.quantity cm3/: 20,2...23,2  
1000H.: (18,7...24,7)

#### Zero delivery (stop):

#### Mech. shutoff:

Speed 1/min: 2400  
Del.quantity cm3/: 0..3  
1000H.: -

#### Electr. shutoff:

Speed 1/min: 450  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 450  
Del.quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 650  
Del.quantity cm3/: 0,0...5,0  
1000H.: -  
3rd speed 1/min: 1200  
Del.quantity cm3/: 0,0...7,0  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 400  
Del.quantity cm3/: -  
ind. 1000H: 18,0

2nd speed 1/min: 500  
Del.quantity cm3/: -  
max. 1000H : 23,5

#### Shutoff electromagnet:



Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,3...1,5
SVS max.	mm	: 2,7
FH	mm	: 1,8...2,4

Remarks:

:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 E  
Edition : 04.11.87  
replaces : 12.83  
Calibrating oil : ISO-4113

Injection pump : VE 4/ 9F2000 R160  
Type number : O 460 494 149

Customer-specific information  
Customer : VW

Engine : 068.5T-1,6L.

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/  
1000H.: 42,5...43,5  
Dispersion cm3/ : 2,5  
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm3/  
1000H.: 24,5...25,5

Low-idle speed regulation:

Speed 1/min: 475  
Charge press. hPa: -  
Del. quantity cm3/  
1000H.: 6,0...10,0

Full-load speed regulation:

Speed 1/min: 2110  
Charge press. hPa: 750  
Del. quantity cm3/  
1000H.: 10,0...14,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm3/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 1,2...2,0  
mm: (0,9...2,3)  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 3,2...3,6  
mm: (2,7...4,1)  
3rd speed 1/min: 1980  
Charge press. hPa: 750  
TD travel mm: 5,2...6,0  
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 2,5...3,1  
2nd speed 1/min: 1500

Charge press. hPa: 750  
Supply-pump  
pressure bar: 4,6...5,2  
3rd speed 1/min: 1980  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 5,7...6,3

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1980  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting  
point hPa: 300  
LDA stroke mm: 4,5  
Del. quantity cm3/: 33,5...34,5  
1000H.: (31,0...37,0)  
2nd speed 1/min: 2150  
Charge press. hPa: 750  
Del. quantity cm3/: 0,0...6,0  
1000H.: -  
3rd speed 1/min: 2130  
Charge press. hPa: 750  
Del. quantity cm3/: 0,0...12,00  
1000H.: -  
4th speed 1/min: 2100  
Charge press. hPa: 750  
Del. quantity cm3/: 5,0...29,0  
1000H.: -  
5th speed 1/min: 2090  
Charge press. hPa: 750  
Del. quantity cm3/: 12,0...36,0  
1000H.: -  
6th speed 1/min: 2060  
Charge press. hPa: 750  
Del. quantity cm3/: 29,0...53,0  
1000H.: -  
7th speed 1/min: 1980  
Charge press. hPa: 750  
Del. quantity cm3/: 40,0...42,0  
1000H.: (38,8...43,2)  
8th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm3/: 42,5...43,5  
1000H.: (40,8...45,2)  
9th speed 1/min: 1000  
Charge press. hPa: 300  
Del. quantity cm3/: 33,5...34,5  
1000H.: (31,0...37,0)  
10th speed 1/min: 600

Charge press. hPa: -  
Del. quantity cm3/: 24,5...25,5  
1000H: (22,0...28,0)  
11th speed 1/min: 600  
Charge press. hPa: 750  
Del. quantity cm3/: 31,0...34,0  
1000H: (29,5...35,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 475  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 475  
Del. quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 600  
Del. quantity cm3/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350  
Del. quantity cm3/: -  
ind. 1000H: 32,0

2nd speed 1/min: 450  
Del. quantity cm3/: -  
max. 1000H : 18,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,7...6,0  
MS mm : 1,2...1,45

Remarks:

:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6 A1  
Edition : 03.11.87  
replaces : 03.10.86  
Calibrating oil : ISO-4113  
Injection pump : VE 4/ 9F1800 R12S-1  
Type number : 0 460 494 168

Customer-specific information  
Customer : FORD

Engine : 1,6L IDI IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 5,0...5,4  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5,3...5,9

KSB solenoid-operated  
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1000  
Del.quantity cm3/  
1000H.: 25,1...26,1  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 440  
Del.quantity cm3/  
1000H.: 7,0...11,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,0  
1000H.: -

Full-load speed regulation:

Speed 1/min: 1850  
Del.quantity cm3/  
1000H.: 20,0...26,0  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 50,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 600  
TD travel mm: 2,2...4,2  
mm: -

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 800  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1500  
TD travel mm: 5,0...5,4  
mm: (4,5...5,9)

KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 1750

TD travel mm: 6,3...7,1  
mm: (6,0...7,4)

KSB solenoid-operated  
valve volt: 12,0

#### Supply-pump pressure characteristic:

1st speed 1/min: 600

Supply-pump pressure bar: 3,1...3,7

KSB solenoid-operated  
valve volt: 12,0

2nd speed 1/min: 1500

Supply-pump pressure bar: 5,3...5,9

KSB solenoid-operated  
valve volt: 12,0

3rd speed 1/min: 1750

Supply-pump pressure bar: 5,9...6,5

KSB solenoid-operated  
valve volt: 12,0

#### Overflow quantity at overflow valve:

1st speed 1/min: 600

KSB solenoid-operated  
valve volt: 12,0

Overflow quantity cm3/10s: (41...83  
(26...98)

2nd speed 1/min: 1750

KSB solenoid-operated  
valve volt: 12,0

Overflow quantity cm3/10s: (55...138  
(40...153)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 2050

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 0,0...2,0  
1000H.: -

2nd speed 1/min: 1910

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 7,5...15,5  
1000H.: (6,5...16,5)

3rd speed 1/min: 1850

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 20,0...26,0  
1000H.: (19,0...27,0)

4th speed 1/min: 1750

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 28,3...30,3  
1000H.: (27,1...31,5)

5th speed 1/min: 1000

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 25,1...26,1  
1000H.: (23,4...27,8)

6th speed 1/min: 600

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm3/: 23,0...26,0  
1000H.: (21,5...27,5)

#### Zero delivery (stop):

#### Electr. shutoff:

Speed 1/min: 440

ELAB volt: -

Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

#### Idle delivery:

1st speed 1/min: 440

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 7,0...11,0  
1000H.: (5,0...13,0)

2nd speed 1/min: 475

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 2,5...7,5  
1000H.: (0,5...9,5)

3rd speed 1/min: 570

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: 0,0...3,6  
1000H.: -

#### Automatic starting fuel delivery:

1st speed 1/min: 400

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: -  
ind. 1000H: 30,0

2nd speed 1/min: 500

KSB solenoid-operated  
valve volt: 12,0

Del.quantity cm3/: -  
max. 1000H: 30,0

#### Shutoff electromagnet:

#### Cut-in

min. voltage : 10,0

Rated voltage : 12,0

#### Mounting and assembly dimensions:

Designation

K	mm	:	3,2...3,4
KF	mm	:	5,7...6,0
MS	mm	:	1,6...1,85
SVS max.	mm	:	4,0
XK	mm	:	23,3...25,3
XL	mm	:	10,4...13,8

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E  
Edition : 28.08.87  
replaces : 02.87  
Calibrating oil : ISO 4113  
Injection pump : VE 4/ 9F2300 R215  
Type number : 0 460 494 174

Customer-specific information  
Customer : OPEL

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
Inlet press., bar : 0,35  
Calibrating nozzle-holder  
assembly : 1 680 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

## Start of delivery

Indicator setting:  
Piston stroke mm: 0,90  
Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 3,7...4,1

## Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,3...32,3  
Dispersion cm3/: 2,5  
1000H.: -

## Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)

## Full-load speed regulation:

Speed 1/min: 2575  
Del.quantity cm3/  
1000H: 17,0...23,0

## Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35,0

## Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,5...2,3  
mm: (1,2...2,6)  
2nd speed 1/min: 1500  
TD travel mm: -  
mm: (3,2...4,6)  
3rd speed 1/min: 2300  
TD travel mm: 6,9...7,7  
mm: (6,6...8,0)

## Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump  
pressure bar: 1,7...2,3  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 3,5...4,1  
3rd speed 1/min: 2300  
Supply-pump  
pressure bar: 7,0...7,6

## Overflow quantity at overflow valve:

1st speed 1/min: 600



Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
Del. quantity cm3/: -  
1000H.: 0,0...5,0  
2nd speed 1/min: 2735  
Del. quantity cm3/: 5,0...11,0  
1000H.: (4,0...12,0)  
3rd speed 1/min: 2575  
Del. quantity cm3/: -  
1000H.: (16,0...24,0)  
4th speed 1/min: 2300  
Del. quantity cm3/: 29,2...31,8  
1000H.: (28,2...32,8)  
5th speed 1/min: 1500  
Del. quantity cm3/: 31,3...32,3  
1000H.: (29,5...34,1)  
6th speed 1/min: 600  
Del. quantity cm3/: 23,8...26,8  
1000H.: (22,3...28,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 425  
Del. quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 500  
Del. quantity cm3/: 2,0...7,0  
1000H.: (0,5...8,5)  
3rd speed 1/min: 1200  
Del. quantity cm3/: 0,0...2,0  
1000H.: -  
4th speed 1/min: 1800  
Del. quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del. quantity cm3/: -  
ind. 1000H: 30,0

2nd speed 1/min: 400

Del. quantity cm3/: -  
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 17,0...19,0
XL	mm	: 10,6...14,0

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E1  
Edition : 28.08.87  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2300 R215-1  
Type number : O 460 494 175  
  
Customer-specific information  
Customer : OPEL

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 680 901 000  
  
Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

## Start of delivery

Indicator setting:  
Piston stroke mm: 0.90  
Outlet : D

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 3,7...4,1

## Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,3...32,3  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575  
Del.quantity cm3/  
1000H.: 17,0...23,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,5...2,3  
mm: (1,2...2,6)  
2nd speed 1/min: 1500  
TD travel mm: 3,7...4,1  
mm: (3,2...4,6)  
3rd speed 1/min: 2300  
TD travel mm: 6,9...7,7  
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump pressure bar: 1,7...2,3  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 3,5...4,1  
3rd speed 1/min: 2300  
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600

Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
Del.quantity cm3/: -  
1000H.: 0,0...5,0  
2nd speed 1/min: 2735  
Del.quantity cm3/: 5,0...11,0  
1000H.: (4,0...12,0)  
3rd speed 1/min: 2575  
Del.quantity cm3/: 17,0...23,0  
1000H.: (16,0...24,0)  
4th speed 1/min: 2300  
Del.quantity cm3/: 29,2...31,8  
1000H.: (28,2...32,8)  
5th speed 1/min: 1500  
Del.quantity cm3/: 31,3...32,3  
1000H.: (29,5...34,1)  
6th speed 1/min: 600  
Del.quantity cm3/: 23,8...26,8  
1000H.: (22,3...28,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del.quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 425  
Del.quantity cm3/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 500  
Del.quantity cm3/: 2,0...7,0  
1000H.: (1,0...8,0)  
3rd speed 1/min: 1200  
Del.quantity cm3/: 0,0...2,0  
1000H.: -  
4th speed 1/min: 1800  
Del.quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del.quantity cm3/: -  
ind. 1000H.: 30,0  
2nd speed 1/min: 400

Del.quantity cm3/: -  
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 18,7...20,7
XL	mm	: 10,1...13,5

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet :  
Edition : 28.08.87  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2300 R215-2  
Type number : D 460 494 176  
  
Customer-specific information  
Customer : OPEL

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 680 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
  
Indicator setting:  
Piston stroke mm: 0.90  
Outlet : D  
  
Injection-pump setting values  
Test specifications in parentheses  
  
Timing-device travel:  
  
Speed 1/min: 1500  
Setting value mm: 3,7...4,1  
  
Supply-pump pressure:  
  
Speed 1/min: 1500  
Setting value bar: 4,9...5,5  
  
Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,3...32,3  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575  
Del.quantity cm3/  
1000H.: 17,0...23,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 40,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,5...2,3  
mm: (1,2...2,6)  
2nd speed 1/min: 1500  
TD travel mm: -  
mm: (3,2...4,6)  
3rd speed 1/min: 2300  
TD travel mm: 6,9...7,7  
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump pressure bar: 1,7...2,3  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 3,5...4,1  
3rd speed 1/min: 2300  
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 55...138  
quantity cm3/10s: (40...153)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
Del.quantity cm3/: -  
1000H.: 0,0...5,0  
2nd speed 1/min: 2735  
Del.quantity cm3/: 6,5...13,5  
1000H.: (6,0...14,0)  
3rd speed 1/min: 2575  
Del.quantity cm3/: -  
1000H.: (16,0...24,0)  
4th speed 1/min: 2300  
Del.quantity cm3/: 29,25...31,75  
1000H.: (28,3...32,7)  
5th speed 1/min: 1500  
Del.quantity cm3/: -  
1000H.: (29,6...34,0)  
6th speed 1/min: 600  
Del.quantity cm3/: 23,8...26,8  
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300  
Del.quantity cm3/: -  
1000H.: -

Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 425  
Del.quantity cm3/: -  
1000H.: (4,0...12,0)  
2nd speed 1/min: 500  
Del.quantity cm3/: 2,0...7,0  
1000H.: (0,5...8,5)  
3rd speed 1/min: 1200  
Del.quantity cm3/: 0,0...2,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del.quantity cm3/: -  
in l. 1000H: 30,0  
2nd speed 1/min: 400  
Del. uantity cm3/: -  
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	:	3,2...3,4
KF	mm	:	5,7...6,0
MS	mm	:	0,9...1,1
SVS max.	mm	:	3,9
XK	mm	:	17,0...20,0
XL	mm	:	10,6...14,0

Remarks:

:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E3  
Edition : 28.08.87  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215-3  
Type number : O 460 494 177

Customer-specific information  
Customer : OPEL

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 680 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery

Indicator setting:  
Piston stroke mm: 0.90  
Outlet : D

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:



Speed 1/min : 1500  
Del.quantity cm3/  
1000H.: 31,3...32,3  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425  
Del.quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,5  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575  
Del.quantity cm3/  
1000H.: 17,0...23,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 1000  
TD travel mm: 1,5...2,3  
mm: (1,2...2,6)  
2nd speed 1/min: 1500  
TD travel mm: -  
mm: (3,2...4,6)  
3rd speed 1/min: 2300  
TD travel mm: 6,9...7,7  
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump pressure bar: 1,7...2,3  
2nd speed 1/min: 1000  
Supply-pump pressure bar: 3,5...4,1  
3rd speed 1/min: 2300  
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 55...138  
quantity cm3/10s: (40...153)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
Del.quantity cm3/: -  
1000H.: 0,0...5,0  
2nd speed 1/min: 2735  
Del.quantity cm3/: 6,5...13,5  
1000H.: (6,0...14,0)  
3rd speed 1/min: 2575  
Del.quantity cm3/: -  
1000H.: (16,0...24,0)  
4th speed 1/min: 2300  
Del.quantity cm3/: 29,25...31,75  
1000H.: (28,3...32,7)  
5th speed 1/min: 1500  
Del.quantity cm3/: -  
1000H.: (29,6...34,0)  
6th speed 1/min: 600  
Del.quantity cm3/: 23,8...26,8  
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300  
Del.quantity cm3/: -  
1000H.: -

Idle delivery:

Mfg. date: until : -  
1st speed 1/min: 425  
Del.quantity cm3/: -  
1000H.: (4,0...12,0)  
2nd speed 1/min: 500  
Del.quantity cm3/: 2,0...7,0  
1000H.: (0,5...8,5)  
3rd speed 1/min: 1200  
Del.quantity cm3/: 0,0...2,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del.quantity cm3/: -  
ind. 1000H: 30,0  
2nd speed 1/min: 400  
Del.quantity cm3/: -  
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 18,7...20,7
XL	mm	: 10,1...13,5

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6 A2  
Edition : 03.11.87  
replaces : 03.10.86  
Calibrating oil : ISO-4113

Injection pump : VE 4/ 9F2400 R125-2  
Type number : 0 460 494 186

Customer-specific information  
Customer : FORD

Engine : 1,6 L. IDI IND.

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 4,3...4,7  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5,3...5,9

KSB solenoid-operated  
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min: 1750  
Del. quantity cm3/  
1000H.: 28,8...29,8  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 440  
Del. quantity cm3/  
1000H.: 7,0...11,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm3/: 2,0  
1000H.: -

Full-load speed regulation:

Speed 1/min: 2675  
Del. quantity cm3/  
1000H.: 7,5...13,5  
KSB solenoid-operated  
valve volt: 12,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm3/1000H.: 50,0  
KSB solenoid-operated  
valve volt: 12,0

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 600  
TD travel mm: 2,2...4,2  
mm: -  
KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 1000  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1500  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)  
KSB solenoid-operated  
valve volt: 12,0  
4th speed 1/min: 2000

TD travel mm: 6,8...7,6  
mm: (6,5...7,9)

KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3,1...3,7  
KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 5,3...5,9  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 6,6...7,2  
KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2400  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm3/: 0,0...2,0  
1000H.: -  
2nd speed 1/min: 2675  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm3/: 7,5...13,5  
1000H.: (6,5...14,5)  
3rd speed 1/min: 2550  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm3/: 18,5...26,5  
1000H.: (17,5...27,5)  
4th speed 1/min: 2400  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm3/: 27,2...29,2  
1000H.: (26,0...30,4)  
5th speed 1/min: 1750

KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 28,8...29,8  
1000H.: (27,1...31,5)  
6th speed 1/min: 1000  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 24,1...27,1  
1000H.: (23,4...27,8)  
7th speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 23,0...26,0  
1000H.: (21,5...27,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 440  
ELAB volt: -  
Del.quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 440  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 7,0...11,0  
1000H.: (5,0...13,0)  
2nd speed 1/min: 475  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 2,5...7,5  
1000H.: (0,5...9,5)  
3rd speed 1/min: 570  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 0,0...3,6  
1000H.: -

Arrangement of drivers on engine-  
speed lever for exhaust-gas-  
recirculation valve linkage (guage)

1st speed 1/min: 1100  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: 10,6...11,6  
1000H.: 9,1...13,1

Automatic starting fuel delivery:

1st speed 1/min: 400  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: -  
ind. 1000H: 30,0

2nd speed 1/min: 500  
KSB solenoid-operated  
valve volt: 12,0  
Del.quantity cm<sup>3</sup>/: -  
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,7...6,0  
MS mm : 1,6...1,85  
SVS max. mm : 3,4

For adjustment of switching point  
(EGR valve), include 12.0 mm spacer  
at third fuel-delivery stop.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 D  
Edition : 04.11.87  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE 4/ 9F2300 R162-1  
Type number : 0 460 494 195  
Customer-specific information  
Customer : PEUGEOT  
Engine : XUD9

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
Inlet press., bar : 0,35  
Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 3,2...3,6

## Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 29,5...30,5  
Dispersion cm3/: 2,5  
1000H.: (3,0)

## Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 8,5...10,5  
Dispersion cm3/: 2,0  
1000H.: (3,0)  
Residual-Delivery Setting  
Speed 1/min: 550  
Del.quantity cm3/  
1000H.: 2,5...3,5

## Full-load speed regulation:

Speed 1/min: 2400  
Del.quantity cm3/  
1000H.: 20,0...26,0

## Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 44,0

## Load-dependent start of delivery:

Speed 1/min: 1250

## Inspection-pump test specifications Test specifications in parentheses

1st speed 1/min: 800  
TD travel mm: 0,7...1,5  
mm: (0,4...1,8)  
2nd speed 1/min: 1250  
TD travel mm: 3,2...3,6  
mm: (2,7...4,1)  
3rd speed 1/min: 2000  
TD travel mm: 7,5...8,3  
mm: (7,2...8,6)

## Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 2,6...3,2  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 3,9...4,5  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 5,9...6,5

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2690  
Del.quantity cm3/: 0,0...7,0  
1000H.: -  
2nd speed 1/min: 2540  
Del.quantity cm3/: 11,5...17,5  
1000H.: (10,5...18,5)  
3rd speed 1/min: 2440  
Del.quantity cm3/: 20,0...26,0  
1000H.: (19,0...27,0)  
4th speed 1/min: 2250  
Del.quantity cm3/: 29,8...31,8  
1000H.: (28,8...32,8)  
5th speed 1/min: 2000  
Del.quantity cm3/: 30,6...32,6  
1000H.: (29,6...33,6)  
6th speed 1/min: 1250  
Del.quantity cm3/: 29,5...30,5  
1000H.: (28,0...32,0)  
7th speed 1/min: 800  
Del.quantity cm3/: 30,7...33,3  
1000H.: (30,0...34,0)  
8th speed 1/min: 500  
Del.quantity cm3/: 29,5...32,5  
1000H.: (29,0...33,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del.quantity cm3/: -  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm3/: 8,5...10,5  
1000H.: (5,5...13,5)

High Idle:

Speed 1/min: 470  
Del.quantity cm3/: 8,0...10,0  
1000H.: (5,0...13,0)

Residual:

C05

Speed 1/min: 550  
Del.quantity : 2,5...3,5  
1000H.: (1,0...5,0)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del.quantity cm3/: -  
ind. 1000H: 20,0

2nd speed 1/min: 300  
Del.quantity cm3/: -  
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,7...6,0  
MS mm : 1,4...1,55  
SVS max. mm : 3,0  
XK mm : 17,0...19,0  
XL mm : 11,5...14,9

Remarks:

Setting of residual delivery.

Idle setting (LFG) according to  
VDT-I-460/135.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 K1  
 Edition : 04.11.87  
 replaces : -  
 Calibrating oil : ISO-4113  
 Injection pump : VE 4/ 9F2300 R162-2  
 Type number : 0 460 494 215  
 Customer-specific information  
 Customer : PEUGEOT  
 Engine : XUD9

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 return temp. °C  
 with thermometer : 40...48  
 electronically : 42...50  
 Inlet press., bar : 0,35  
 Calibrating nozzle-holder  
 assembly : 1 688 901 022

Opening  
 pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
 x Wall thickness : 2  
 x Length mm : 450

Start of delivery  
 Prestroke mm : -  
 (from BDC): -

Injection-pump setting values  
 Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
 Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1250  
 Setting value bar: 4,2...4,8

Full-load del. w/out charge press.:

Speed 1/min : 1250  
 Del.quantity cm3/  
 1000H.: 29,5...30,5  
 Dispersion cm3/: 2,5  
 1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 375  
 Del.quantity cm3/  
 1000H.: 7,0...9,0  
 Dispersion cm3/: 2,5  
 1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550  
 Del.quantity cm3/  
 1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2400  
 Del.quantity cm3/  
 1000H.: 20,0...26,0

Start:

Speed 1/min: 100  
 Del.quantity : -  
 mind cm3/1000H.: 24,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
 Test specifications in parentheses

1st speed 1/min: 800  
 TD travel mm: 1,5...2,3  
 mm: (1,2...2,6)  
 2nd speed 1/min: 1250  
 TD travel mm: 4,0...4,4  
 mm: (3,5...4,9)  
 3rd speed 1/min: 2000  
 TD travel mm: 7,6...8,4  
 mm: (7,3...8,7)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Supply-pump  
 pressure bar: 3,0...3,6  
 2nd speed 1/min: 1250  
 Supply-pump  
 pressure bar: 4,2...4,8  
 3rd speed 1/min: 2000  
 Supply-pump  
 pressure bar: 6,3...6,9



Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2250  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2650  
Del. quantity cm3/: 0,0...7,0  
1000H.: -  
2nd speed 1/min: 2500  
Del. quantity cm3/: 10,0...16,0  
1000H.: (9,0...17,0)  
3rd speed 1/min: 2400  
Del. quantity cm3/: 20,0...26,0  
1000H.: (19,0...27,0)  
4th speed 1/min: 2250  
Del. quantity cm3/: 30,7...32,7  
1000H.: (29,7...33,7)  
5th speed 1/min: 2000  
Del. quantity cm3/: 31,6...33,6  
1000H.: (30,6...34,6)  
6th speed 1/min: 1250  
Del. quantity cm3/: 29,5...30,5  
1000H.: (28,0...32,0)  
7th speed 1/min: 800  
Del. quantity cm3/: 29,7...32,3  
1000H.: (29,0...33,0)  
8th speed 1/min: 500  
Del. quantity cm3/: 30,0...33,0  
1000H.: (29,5...33,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del. quantity cm3/: -  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 7,0...9,0  
1000H.: (4,0...12,0)

High Idle:

Speed 1/min: 470  
Del. quantity cm3/: 7,0...9,0  
1000H.: (4,0...12,0)

Residual:

Speed 1/min: 550  
Del. quantity : 2,5...3,5  
1000H.: (1,0...5,0)

Arrangement of drivers on engine-  
speed lever for exhaust-gas-  
recirculation valve linkage (guage)

1st speed 1/min: 1125  
Del. quantity cm3/: 17,0...19,0  
1000H.: (15,5...20,5)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del. quantity cm3/: -  
ind. 1000H: 20,0

2nd speed 1/min: 300  
Del. quantity cm3/: -  
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,7...6,0  
MS mm : 1,3...1,55  
XK mm : 17,0...19,0  
XL mm : 14,2...17,6

Remarks:

:

Setting of residual delivery.

Idle setting (LFG) according to  
VDT-1-460/135.

For adjustment of switching point  
(EGR valve), include 10.8 mm spacer  
at third fuel-delivery stop.

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1,9 K  
Edition : 04.11.87  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE 4/ 9F2300 R162-3  
Type number : 0 460 494 223  
  
Customer-specific information  
Customer : PEUGEOT  
  
Engine : XUD9

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 3,9...4,5

Full-load del. w/out charge press.:

Speed 1/min : 1250  
Del.quantity cm3/  
1000H.: 29,5...30,5  
Dispersion cm3/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375  
Del.quantity cm3/  
1000H.: 8,5...10,5  
Dispersion cm3/: 2,5  
1000H.: (3,5)  
Residual-Delivery Setting  
Speed 1/min: 550  
Del.quantity cm3/  
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2440  
Del.quantity cm3/  
1000H.: 20,0...26,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm3/1000H.: 24,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

1st speed 1/min: 800  
TD travel mm: 0,7...1,5  
mm: (0,4...1,8)  
2nd speed 1/min: 1250  
TD travel mm: 3,2...3,6  
mm: (2,7...4,1)  
3rd speed 1/min: 2000  
TD travel mm: 7,5...8,3  
mm: (7,2...8,6)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
Supply-pump  
pressure bar: 2,6...3,2  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 3,9...4,5  
3rd speed 1/min: 2000  
Supply-pump  
pressure bar: 5,9...6,5

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2300  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2690  
Del.quantity cm3/: 0,0...7,0  
1000H.: -  
2nd speed 1/min: 2540  
Del.quantity cm3/: 11,5...17,5  
1000H.: (10,5...18,5)  
3rd speed 1/min: 2440  
Del.quantity cm3/: 20,0...26,0  
1000H.: (19,0...27,0)  
4th speed 1/min: 2250  
Del.quantity cm3/: 29,8...31,8  
1000H.: (28,8...32,8)  
5th speed 1/min: 2000  
Del.quantity cm3/: 30,6...32,6  
1000H.: (29,6...33,6)  
6th speed 1/min: 1250  
Del.quantity cm3/: 29,5...30,5  
1000H.: (28,0...32,0)  
7th speed 1/min: 800  
Del.quantity cm3/: 30,7...33,3  
1000H.: (30,0...34,0)  
8th speed 1/min: 500  
Del.quantity cm3/: 29,5...32,5  
1000H.: (29,0...33,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2300  
ELAB volt: -  
Del.quantity cm3/: -  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del.quantity cm3/: 8,5...10,5  
1000H.: (5,5...13,5)

High Idle:

Speed 1/min: 470  
Del.quantity cm3/: 8,0...10,0  
1000H.: (5,0...13,0)

Residual:

C09

Speed 1/min: 550  
Del.quantity : 2,5...3,5  
1000H.: (1,0...5,0)

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del.quantity cm3/: -  
ind. 1000H.: 20,0

2nd speed 1/min: 300  
Del.quantity cm3/: -  
max. 1000H.: 45,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,4...1,55
SVS max.	mm	: 3,0
XK	mm	: 17,0...19,0
XL	mm	: 11,5...14,9

Remarks:

:

Setting of residual delivery.

Idle setting (LFG) according to  
VDT-I-460/135.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 32  
Edition : 02.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 400 463 155  
Injection pump  
Pump designation : PES3A80D410/3RS1350  
EP type number : 0 410 483 023  
Governor  
Governor design. : RSV325...1175A8C2223  
-1L  
Governer no. : 0 420 232 483

Customer-spec. information  
Customer : KHD

Engine : F3L912

1st version kW : 38.0  
Speed 1/min: 2350

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 3- 2

SD ang. spacing<sup>o</sup>CS: 0-120-240  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 10.90...11.00

Del.quantity cm<sup>3</sup>/ : 5.5...5.6

100H.: (5.4...5.8)

Dispersion cm<sup>3</sup>/ : 0.2

100H.: (0.3)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 0.8...1.4

100H.: (0.6...1.5)

Dispersion cm<sup>3</sup>/ : 0.2

100H.: (0.3)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : 5.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm<sup>3</sup>/ : 55.5...56.5

1000H.: (54.0...58.0)

Dispersion cm<sup>3</sup>/ : 2.50

1000H.: (3.50)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 52...60

Testing:

1st c-rod trav.mm : 9.10

Speed 1/min : 1215...1225

2nd c-rod trav.mm : 4.00

Speed 1/min : 1245...1275

3rd c-rod trav.mm : 4.00  
Speed 1/min : 1250...1280  
4th speed 1/min : 1425  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 16...24  
Setting point w/out aux. spring  
Speed 1/min : 325  
Contr.-rod trav.mm: 5.5

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 325  
C-rod trav.mm : 5.90...6.10  
C-rod trav.mm : 2.00  
Speed 1/min : 455...585

#### TORQUE CONTROL

Dimension a mm : 0.85  
Torque-control curve - 1st version  
1st speed 1/min : 1175  
C-rod trav.mm : 10.10...10.20  
2nd speed 1/min : 500  
C-rod trav.mm : 10.90...11.00  
3rd speed 1/min : 1050  
C-rod trav.mm : 10.40...10.60

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 1175  
Del.quantity cm3/ : 56.0...60.0  
1000H.: (54.0...62.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.10  
Speed 1/min : 1215...1225

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 100.0...110.0  
1000H.: (97.0...113.0)  
Contr.-rod trav.mm: 17.00...17.30

Remarks:

: RENAULT

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RAB 9,7 B  
Edition : 02.11.87  
Superceeded : 14.11.86  
Calibrating oil : ISO-4113

Combination no. : 0 400 846 514

Injection pump  
Pump designation : PES6A9SD420LS2595  
EP type number : 0 410 896 930  
Governor  
Governor design. : RQ200/1100AB1094-1R  
Governor no. : 0 420 201 637

Customer-spec. information  
Customer : RABA

Engine : D2356HM6U

1st version kW : 162.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.05)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 11.30...11.40

Del.quantity cm3/ : 11.4...11.6

100H.: (11.2...11.8)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 200.0

Contr.-rod trav. m: 6.6...6.8

Del.quantity cm3/ : 0.8...1.4

100H.: (0.5...1.6)

Dispersion cm3/ : 0.3

100H.: (0.5)

#### SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 550

Contr.-rod travelmm: 19.20...20.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 114.0...116.0

1000H.: (112.0...118.0)

Dispersion cm3/ : 3.00

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 550

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.30

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1185...1215

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 200

Contr.-rod trav.mm: 6.5

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.00

Speed 1/min : 200

C-rod trav.mm : 6.40...6.60

C-rod trav.mm : 2.00

Speed 1/min : 290...330

Speed 1/min : 400

C-rod trav.mm max : 1.00

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 11.30...11.40

2nd speed 1/min : 500

C-rod trav.mm : 11.90...12.00

3rd speed 1/min : 750

C-rod trav.mm : 11.80...12.00

4th speed 1/min : 800

C-rod trav.mm : 11.60...11.90

#### SWITCH-OVER POINT

Speed 1/min : 140 (160)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 500

Del.quantity cm3/ : 0.0...110.0

1000H.: (0.0...112.5)

Speed 1/min : 800

Del.quantity cm3/ : 112.0...118.0

1000H.: (109.5...120.5)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 500

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.30

Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Contr.-rod trav.mm: 17.10...17.50

Remarks:

:

APPLICATION  
Omnibus



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : LIE 8,4 B 1  
 Edition : 02.11.87  
 Superceeded : 9.3.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 846 562  
 Injection pump  
 Pump designation : PES6A100D410RS2687  
 EP type number : 0 410 806 001  
 Governor  
 Governor design. : RQV400...1000AB1231L  
 Governor no. : 0 420 212 206

Customer-spec. information  
 Customer : LIEBHERR

Engine : D906T

1st version kW : 170.0  
 Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 40...45  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Contr.-rod trav.mm: 9.00...12.00

C15

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
 & c-rod trav max. : 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed 1/mi: 1000  
 -----  
 Contr.-rod trav.mm: 13.30...13.40  
 -----  
 Del.quantity cm3/ : 13.6...13.8  
 -----  
 100H.: (13.4...14.0)  
 -----  
 Dispersion cm3/ : 0.3  
 -----  
 100H.: (0.6)  
 -----  
 2nd speed 1/min: 400.0  
 Contr.-rod trav. m: 6.8...7.0  
 Del.quantity cm3/ : 1.0...1.6  
 100H.: (0.7...1.8)  
 Dispersion cm3/ : 0.3  
 100H.: (0.5)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 440  
 Sleeve travel mm: 2.10...2.30  
 2nd speed 1/min: 500  
 Sleeve travel mm: 3.00...3.50  
 3rd speed 1/min: 585  
 Sleeve travel mm: 3.50...4.00  
 4th speed 1/min: 1045  
 Sleeve travel mm: 8.10...8.20  
 5th speed 1/min: 1135  
 Sleeve travel mm: 9.40...9.70

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1065  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1000  
 Charge press. hPa : 700

Del.quantity cm3/ : 136.5...138.5  
1000H.: (134.5...140.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 62...70  
Testing:  
1st c-rod trav.mm : 12.30  
Speed 1/min : 1040...1050  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1130...1160  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 12...19

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.30  
Speed 1/min : 400  
C-rod trav.mm : 6.80...7.00  
C-rod trav.mm : 2.00

#### CONSTANT REGULATION

Speed 1/min : 425...530

#### TORQUE CONTROL

Dimension a mm : -  
Torque-control curve - 1st version  
1st speed 1/min : 1000  
C-rod trav.mm : 13.30...13.40  
2nd speed 1/min : 500  
C-rod trav.mm : 13.30...13.50

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 13.30...13.40

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 12.10...12.30  
2nd pressure hPa : 435  
C-rod trav.mm : 12.90...13.00  
3rd pressure hPa : 410  
C-rod trav.mm : 12.40...12.60

#### SWITCH-OVER POINT

Speed 1/min : 320 (340)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 100.0...102.0  
1000H.: (98.0...104.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than  
full-load trav.mm: 12.30  
Speed 1/min : 1040...1050

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 115.0...125.0  
1000H.: (112.0...128.0)  
Contr.-rod trav.mm: 19.50...21.00

#### LOW IDLE

Speed 1/min : 400  
Contr.-rod trav.mm: 6.80...7.00  
Del.quantity cm3/ : 10.0...16.0  
1000H.: (7.5...18.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 V 20  
 Edition : 06.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 846 564  
 Injection pump  
 Pump designation : PES6A90D410RS2596  
 EP type number : 0 410 896 073  
 Governor  
 Governor design. : RQV300...1300AB1066-  
 SL  
 Governor no. : 0 420 212 212  
 Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 122.0  
 Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-gil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1300

Contr.-rod trav.mm: 12.20...12.30

Del.quantity cm3/ : 7.6...7.7

100H.: (7.4...7.9)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 8.7...8.9

Del.quantity cm3/ : 1.0...1.6

100H.: (0.8...1.8)

Dispersion cm3/ : 0.2

100H.: (-)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 0.80...1.30

2nd speed 1/min: 500

Sleeve travel mm: 2.30...2.80

3rd speed 1/min: 750

Sleeve travel mm: 4.10...4.30

4th speed 1/min: 1500

Sleeve travel mm: 8.50...8.60

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1500

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300

Charge press. hPa : 700

Del.quantity cm3/ : 76.5...77.5

1000H.: (74.5...79.5)

Dispersion cm3/ : 3.00

1000H.: (5.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 58...64

Testing:

1st c-rod trav.mm : 11.20

Speed 1/min : 1340...1350

2nd c-rod trav.mm : 4.00

Speed 1/min : 1510...1540

4th speed 1/min : 1650

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 19...27

Testing:

Speed 1/min : 100

C-rod trav.mm min : 10.30

Speed 1/min : 300

C-rod trav.mm : 8.70...8.90

C-rod trav.mm : 2.00

Speed 1/min : 570...630

#### TORQUE CONTROL

Dimension a mm : ?

Torque-control curve - 1st version

1st speed 1/min : 1300

C-rod trav.mm : 12.20...12.30

2nd speed 1/min : 800

C-rod trav.mm : 13.30...13.40

3rd speed 1/min : 1075

C-rod trav.mm : 13.00...13.20

4th speed 1/min : 1175

C-rod trav.mm : 12.60...12.90

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 11.90...12.00

2nd pressure hPa : 400

C-rod trav.mm : 12.80...12.90

3rd pressure hPa : 300

C-rod trav.mm : 12.20...12.40

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

## FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700

Speed 1/min : 800

Del.quantity cm3/ : 78.5...81.5

1000H.: (76.0...84.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 52.5...55.5

1000H.: (50.0...58.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.20

Speed 1/min : 1340...1350

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 73.0...83.0

1000H.: (70.0...86.0)

Contr.-rod trav.mm: 15.40...15.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 3,1 B 1  
 Edition : 02.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 863 008  
 Injection pump  
 Pump designation : PES3A90D320/3RS2658  
 EP type number : 0 410 893 004  
 Governor  
 Governor design. : RSV325...1500A2C505-2R  
 Governor no. : 0 420 233 196  
 Customer-spec. information  
 Customer : MWM

Engine : D226P-3

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.00  
 Calibrating nozzle-holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test inj. tubing : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.95...3.05  
 : (2.90...3.10)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 2- 3

SD ang. spacing<sup>o</sup>CS: 0-120-240  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...0.00  
& c-rod tray max. : 21.00  
Difference <sup>o</sup> CS : 3.50...4.50

#### BASIC SETTING

1st speed 1/mi: 1500  
-----  
Contr.-rod trav.mm: 11.20...11.30  
-----  
Del.quantity cm3/ : 8.9...9.0  
-----  
100H.: (8.7...9.2)  
-----  
Dispersion cm3/ : 0.3  
-----  
100H.: (0.5)  
-----  
2nd speed 1/min: 325.0  
Contr.-rod trav. m: 10.0...10.2  
Del.quantity cm3/ : 4.8...5.4  
100H.: (4.6...5.6)  
Dispersion cm3/ : 0.2  
100H.: (0.4)

#### SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : 2.50

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1500  
Del.quantity cm3/ : 89.5...90.5  
1000H.: (87.5...92.5)  
Dispersion cm3/ : 3.00  
1000H.: (5.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 49...57  
Testing:  
1st c-rod trav.mm : 10.20  
Speed 1/min : 1540...1550  
2nd c-rod trav.mm : 4.00

Speed 1/min : 1590...1620  
3rd c-rod trav.mm : 4.00  
Speed 1/min : 1595...1625  
4th speed 1/min : 1765  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 11...19  
Setting point w/out aux. spring  
Speed 1/min : 325  
Contr.-rod trav.mm: 9.6

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 325  
C-rod trav.mm : 10.00...10.20  
C-rod trav.mm : 2.00  
Speed 1/min : 475...535

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1500  
C-rod trav.mm : 11.20...11.30  
2nd speed 1/min : 500  
C-rod trav.mm : 11.20...11.40

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.20  
Speed 1/min : 1540...1550

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 115.0  
1000H.: (112.0)  
Contr.-rod trav.mm: 16.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 4,1 C 7  
Edition : 02.11.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113  
Combination no. : 0 400 864 058  
Injection pump  
Pump designation : PES4A80D410/3RS2S23  
EP type number : 0 410 884 043  
Governor  
Governor design. : RSV325...1250A8C540-  
1L  
Governor no. : 0 420 232 355

Customer-spec. information  
Customer : KHD

Engine : F4L913

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1250  
Contr.-rod trav.mm: 11.60...11.70

Del.quantity cm3/ : 6.8...6.9  
100H.: (6.7...7.1)

Dispersion cm3/ : 0.2  
100H.: (0.4)

2nd speed 1/min: 325.0  
Contr.-rod trav. m: 8.1...8.3  
Del.quantity cm3/ : 1.0...1.6  
100H.: (0.8...1.7)  
Dispersion cm3/ : 0.2  
100H.: (0.3)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.00...0.70

Governor-spring reload  
Notch setting x : 4.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1250  
Del.quantity cm3/ : 68.5...69.5  
1000H.: (67.0...71.0)  
Dispersion cm3/ : 2.50  
1000H.: (4.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 53...61

Testing:  
1st c-rod trav.mm : 10.60  
Speed 1/min : 1290...1300  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1320...1350  
3rd c-rod trav.mm : 4.00  
Speed 1/min : 1355...1385  
4th speed 1/min : 1555  
C-rod trav.mm : 0.30...1.40



#### LOWEST RATED SPEED I

Control-lever

position degrees: 13...21

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 6.5

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 6.90...7.10

C-rod trav.mm : 2.00

Speed 1/min : 545...605

#### TORQUE CONTROL

Dimension a mm : 0.50

Torque-control curve - 1st version

1st speed 1/min : 1250

C-rod trav.mm : 11.60...11.70

2nd speed 1/min : 500

C-rod trav.mm : 12.10...12.20

3rd speed 1/min : 965

C-rod trav.mm : 11.80...12.00

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 800

Del.quantity cm3/ : 64.5...66.5

1000H.: (62.5...68.5)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.60

Speed 1/min : 1290...1300

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 125.0...135.0

1000H.: (122.0...138.0)

Contr.-rod trav.mm: 19.50...21.00

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 6,1 A 7  
 Edition : 02.11.87  
 Superseded : 13.5.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 866 120  
 Injection pump  
 Pump designation : PES6A85D410/3RS2415  
 EP type number : 0 410 886 915  
 Governor  
 Governor design. : RSV325...1150A8C673-1L  
 Governor no. : 0 420 232 489

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
 : (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1150  
 -----  
 Contr.-rod trav.mm: 11.00...11.10  
 -----

Del.quantity cm3/ : 6.8...6.9  
 -----  
 100H.: (6.6...7.1)  
 -----

Dispersion cm3/ : 0.3  
 -----  
 100H.: (0.4)  
 -----

2nd speed 1/min: 325.0  
 Contr.-rod trav. m: 8.0...8.2  
 Del.quantity cm3/ : 1.0...1.6  
 100H.: (0.8...1.8)  
 Dispersion cm3/ : 0.2  
 100H.: (0.4)

## SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed 1/min: 800  
 Cont.-rod travelmm: 0.30...0.70

Governor-spring reload  
 Notch setting x : 4.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1150  
 Del.quantity cm3/ : 68.0...69.0  
 1000H.: (66.0...71.0)  
 Dispersion cm3/ : 3.00  
 1000H.: (4.50)

## HIGHEST RATED SPEED

1st version  
 Control-lever  
 position degrees: 46...54

Testing:  
 1st c-rod trav.mm : 10.00  
 Speed 1/min : 1190...1200  
 2nd c-rod trav.mm : 4.00  
 Speed 1/min : 1215...1245  
 3rd c-rod trav.mm : 4.00  
 Speed 1/min : 1225...1255  
 4th speed 1/min : 1400  
 C-rod trav.mm : 0.30...1.40

# LOWEST RATED SPEED I

Control-lever

position degrees: 13...21

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 5.0

## Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 5.40...5.60

C-rod trav.mm : 2.00

Speed 1/min : 490...550

## TORQUE CONTROL

Dimension a mm : 0.70

Torque-control curve - 1st version

1st speed 1/min : 1150

C-rod trav.mm : 11.00...11.10

2nd speed 1/min : 500

C-rod trav.mm : 11.70...11.80

3rd speed 1/min : 990

C-rod trav.mm : 11.30...11.50

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1190...1200

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 100.0...110.0

1000H.: (97.0...113.0)

Contr.-rod trav.mm: 16.70...17.30

Remarks:

:

## APPLICATION

Installation 2300

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : EIC 3,9 C 1  
Edition : 02.11.87  
Superceeded : 28.11.86  
Calibrating oil : ISO-4113  
  
Combination no. : 0 400 874 239  
  
Injection pump  
Pump designation : PES4A90D32ORS2634  
EP type number : 0 410 894 026  
Governor  
Governor design. : RSV300...1050A1C2153  
-1R  
Governer no. : 0 420 233 193

Customer-spec. information  
Customer : EICHER

Engine : EDL4

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000  
  
Inlet press., bar : 1.00  
  
Calibrating nozzle-holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test inj. tubing : 1 680 750 014  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27  
  
Prestroke mm : 2.20...2.30  
: (2.15...2.35)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 2- 4- 3

SD ang. spacing°CS: 0-90-180-270  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1050  
-----  
Contr.-rod trav.mm: 12.60...12.70  
-----  
Del.quantity cm3/ : 8.1...8.2  
-----  
100H.: (7.9...8.4)  
-----  
Dispersion cm3/ : 0.2  
-----  
100H.: (0.3)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 10.9...11.1  
Del.quantity cm3/ : 4.1...4.6  
100H.: (3.9...4.8)  
Dispersion cm3/ : 0.2  
100H.: (0.3)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.70  
  
Governor-spring reload  
Notch setting x : 3.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1050  
Del.quantity cm3/ : 81.0...82.0  
1000H.: (79.0...84.0)  
Dispersion cm3/ : 2.00  
1000H.: (3.50)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 46...54

## Testing:

1st c-rod trav.mm : 11.60  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1105...1135  
3rd c-rod trav.mm : 4.00  
Speed 1/min : 1135...1165  
4th speed 1/min : 1300

G-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 13...21

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 10.5

#### Testing:

Speed 1/min : 100

G-rod trav.mm min : 19.50

Speed 1/min : 300

G-rod trav.mm : 10.90...11.10

G-rod trav.mm : 2.00

Speed 1/min : 410...470

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1050

G-rod trav.mm : 12.60...12.70

2nd speed 1/min : 500

G-rod trav.mm : 12.60...12.80

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 500

Del.quantity cm<sup>3</sup>/ : 69.5...71.5

1000H.: (67.0...74.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.60

Speed 1/min : 1090...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm<sup>3</sup>/ : 123.0...133.0

1000H.: (120.0...136.0)

Contr.-rod trav.mm: 19.50...21.00

Remarks:

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 4,0 C  
Edition : 02.11.87  
Superceeded : 2.9.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 400 874 243  
  
Injection pump  
Pump designation : PES4A90D41ORS2666-2  
EP type number : 0 410 894 033  
Governor  
Governor design. : RSV350...1200A2C1139  
-2L  
Governer no. : 0 420 232 471

Customer-spec. information  
Customer : DB

Engine : OM364

1st version kW : 50.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1200

Contr.-rod trav.mm: 9.40...9.50

Del.quantity cm3/ : 4.9...5.0

100H.: (4.7...5.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 8.1...8.7

Del.quantity cm3/ : 1.0...1.2

100H.: (0.8...1.4)

Dispersion cm3/ : 0.2

100H.: (0.4)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : 5.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Del.quantity cm3/ : 49.0...50.0

1000H.: (47.0...52.0)

Dispersion cm3/ : 3.00

1000H.: (5.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 49...57

Testing:

1st c-rod trav.mm : 8.40

Speed 1/min : 1240...1245

2nd c-rod trav.mm : 4.00

Speed 1/min : 1286...1299

3rd c-rod trav.mm : 4.00

Speed 1/min : 1325...1355

4th speed 1/min : 1530  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: -3  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 8.4

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 350  
C-rod trav.mm : 8.30...8.50  
C-rod trav.mm : 2.00  
Speed 1/min : 530...590

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1200  
C-rod trav.mm : 9.40...9.50  
2nd speed 1/min : 800  
C-rod trav.mm : 10.50...10.60  
3rd speed 1/min : 950  
C-rod trav.mm : 10.30...10.50  
4th speed 1/min : 1050  
C-rod trav.mm : 9.70...10.00

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 800  
Del.quantity cm3/ : 45.0...47.0  
1000H.: (42.5...49.5)  
Speed 1/min : 1000  
Del.quantity cm3/ : 48.0...51.0  
1000H.: (45.5...53.5)

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 80.0...90.0  
1000H.: (77.0...93.0)  
Contr.-rod trav.mm: 16.20...16.60

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.10...8.70  
Del.quantity cm3/ : 10.0...12.0  
1000H.: (8.0...14.0)  
Dispersion cm3/ : 2.50  
1000H.: (4.50)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 6,1 D 4  
Edition : 12.11.87  
Superceeded : 15.5.87  
Calibrating oil : ISO-4113

Combination no. : 0 400 876 270

Injection pump  
Pump designation : PES6A85D41ORS2537  
EP type number : 0 410 886 908  
Governor  
Governor design. : RSV325...1150A8C2020  
L

Governer no. : 0 420 232 345

Customer-spec. information  
Customer : KHD

Engine : BF6L913

1st version kW : 106.6  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)



Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 7.9...8.1

100H.: (7.7...8.3)

Dispersion cm<sup>3</sup>/ : 0.3

100H.: (0.4)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 6.8...7.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.5

100H.: (0.7...1.7)

Dispersion cm<sup>3</sup>/ : 0.2

100H.: (0.4)

#### SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 6.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Charge press. hPa : 500

Del.quantity cm<sup>3</sup>/ : 79.5...81.5

1000H.: (77.5...83.5)

Dispersion cm<sup>3</sup>/ : 3.00

1000H.: (4.50)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.00

Speed 1/min : 1240...1270

3rd c-rod trav.mm : 4.00

Speed 1/min : 1270...1300

4th speed 1/min : 1435

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 20...28

Setting point w/out aux. spring

Speed 1/min : 325

Contr.-rod trav.mm: 6.4

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 325

C-rod trav.mm : 6.80...7.00

C-rod trav.mm : 2.00

Speed 1/min : 590...650

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1150

C-rod trav.mm : 11.00...11.10

2nd speed 1/min : 960

C-rod trav.mm : 11.70...11.90

3rd speed 1/min : 500

C-rod trav.mm : 12.50...12.60

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 10.60...10.70

2nd pressure hPa : 350

C-rod trav.mm : 12.10...12.20

3rd pressure hPa : 150

C-rod trav.mm : 11.10...11.40

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 500

Speed 1/min : 850

Del.quantity cm<sup>3</sup>/ : 88.0...91.0

1000H.: (86.0...93.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm<sup>3</sup>/ : 60.0...63.0

1000H.: (58.0...65.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1190...1200

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm<sup>3</sup>/ : 120.0...130.0

1000H.: (117.0...133.0)

Contr.-rod trav.mm: 17.40...18.00

Remarks:

:

On activation of the starting solenoid,  
the start position must be reached.

## APPLICATION

Tractor (tractor engines)

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 G 12  
 Edition : 12.11.87  
 Superceeded : 12.9.86  
 Calibrating oil : ISO-4113

Combination no. : 0 400 876 320

Injection pump  
 Pump designation : PES6A85D410RS2591  
 EP type number : 0 410 886 903  
 Governor  
 Governor design. : RSV325...1150A8C2020  
 Governor no. : 0 420 232 345

Customer-spec. information  
 Customer : KHD

Engine : BF6L913

1st version kW : 117.0  
 Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1200

Contr.-rod trav.mm: 12.30...12.40

Del.quantity cm3/ : 8.4...8.5

100H.: (8.2...8.7)

Dispersion cm3/ : 0.3

100H.: (0.4)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 7.9...8.1

Del.quantity cm3/ : 0.9...1.5

100H.: (0.7...1.7)

Dispersion cm3/ : 0.2

100H.: (0.4)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 6.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Charge press. hPa : 700

Del.quantity cm3/ : 84.0...85.0

1000H.: (82.0...87.0)

Dispersion cm3/ : 3.00

1000H.: (4.50)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 55...63

Testing:

1st c-rod trav.mm : 11.30

Speed 1/min: 1240...1250

2nd c-rod trav.mm : 4.00

Speed 1/min: 1295...1325

3rd c-rod trav.mm : 4.00

Speed 1/min: 1350...1380

4th speed 1/min : 1515  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 18...26  
Setting point w/out aux. spring  
Speed 1/min : 325  
Contr.-rod trav.mm: 7.5

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 325  
C-rod trav.mm : 7.90...8.10  
C-rod trav.mm : 2.00  
Speed 1/min : 640...700

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1200  
C-rod trav.mm : 12.30...12.40  
2nd speed 1/min : 500  
C-rod trav.mm : 13.40...13.50  
3rd speed 1/min : 925  
C-rod trav.mm : 12.80...13.00

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 13.40...13.50

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 12.30...12.40  
2nd pressure hPa : 280  
C-rod trav.mm : 13.10...13.20  
3rd pressure hPa : 175  
C-rod trav.mm : 12.60...12.80

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 700  
Speed 1/min : 650  
Del.quantity cm3/ : 79.0...81.0  
1000H.: (76.5...83.5)  
Charge press. hPa : 700  
Speed 1/min : 925  
Del.quantity cm3/ : 85.0...87.0  
1000H.: (82.5...89.5)  
Charge press. hPa : -

D07

Speed 1/min : 500  
Del.quantity cm3/ : 67.0...68.0  
1000H.: (65.0...70.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 11.30  
Speed 1/min : 1240...1250

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 110.0...120.0  
1000H.: (107.0...123.0)  
Contr.-rod trav.mm: 17.30...17.70

Remarks:

: DX 7.10

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 C 4  
 Edition : 12.11.87  
 Superceeded : 28.11.86  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 876 334  
 Injection pump  
 Pump designation : PES6A90D41ORS2710-1  
 EP type number : 0 410 896 084  
 Governor  
 Governor design. : RSV350...750AOC2006-3L  
 Governor no. : 0 420 232 454

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 54.0  
 Speed 1/min: 1500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
 : (2.20...2.40)

D08

Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 12.20...12.30

Del.quantity cm3/ : 6.4...6.5

100H.: (6.2...6.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 8.2...8.4

Del.quantity cm3/ : 0.6...1.2

100H.: (0.4...1.4)

Dispersion cm3/ : 0.2

100H.: (0.4)

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 64.0...65.0

1000H.: (62.0...67.0)

Dispersion cm3/ : 3.00

1000H.: (5.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 28...36

Testing:

1st c-rod trav.mm : 11.20

Speed 1/min : 750...755

2nd c-rod trav.mm : 4.00

Speed 1/min : 780...793

4th speed 1/min : 900

C-rod trav.mm : 0.30...1.40

## LOWEST RATED SPEED I

Control-lever

position degrees: 16...24

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 8.3

Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 350  
C-rod trav.mm : 8.20...8.40  
C-rod trav.mm : 2.00  
Speed 1/min : 380...420

SET IDLE AUXILIARY SPRING  
Contr.-rod trav.mm: 2.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 78.0...88.0  
1000H.: (75.0...91.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 1 0 1  
Edition : 02.11.87  
Superceeded : 22.5.87  
Calibrating oil : ISO-4113  
Combination no. : 0 400 876 344  
Injection pump  
Pump designation : PES6A95D41ORS2625  
EP type number : 0 410 896 926  
Governor  
Governor design. : RSV325...1250A2C1159  
L  
Governor no. : 0 420 232 490

Customer-spec. information  
Customer : KHD

Engine : BF6L913C

1st version kW : 130.0  
Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 8.9...9.0

100H.: (8.7...9.2)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.4...6.6

Del.quantity cm3/ : 1.0...1.6

100H.: (0.7...1.8)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 3.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Charge press. hPa : 900

Del.quantity cm3/ : 89.0...90.0

1000H.: (87.0...92.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 42...50

Testing:

1st c-rod trav.mm : 10.10

Speed 1/min : 1290...1300

2nd c-rod trav.mm : 4.00

Speed 1/min : 1320...1350

3rd c-rod trav.mm : 4.00

Speed 1/min : 1375...1405  
4th speed 1/min : 1540  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 5.0

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 350  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 575...635

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1250  
C-rod trav.mm : 11.10...11.20  
2nd speed 1/min : 500  
C-rod trav.mm : 11.10...11.30

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 11.10...11.20

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 10.20...10.30  
2nd pressure hPa : 400  
C-rod trav.mm : 10.90...11.00  
3rd pressure hPa : 330  
C-rod trav.mm : 10.50...10.70

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 54.0...56.0  
1000H.: (52.0...58.0)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 500

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.10  
Speed 1/min : 1290...1300

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 120.0...130.0  
1000H.: (117.0...133.0)  
Contr.-rod trav.mm: 17.10...17.30

Remarks:

:

#### APPLICATION

Combine-harvester





Speed 1/min : 1195...1205  
4th speed 1/min : 1250  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 23...31  
Setting point w/out aux. spring  
Speed 1/min : 600  
Contr.-rod trav.mm: 4.0

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 600  
C-rod trav.mm : 3.90...4.10  
C-rod trav.mm : 2.00  
Speed 1/min : 690...750

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 10.10...10.20  
2nd speed 1/min : 950  
C-rod trav.mm : 10.80...11.00

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 93  
Contr.-rod trav.mm: 9.00...9.10

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 8.30...8.50  
2nd pressure hPa : 146  
C-rod trav.mm : 9.80...10.20  
3rd pressure hPa : 500  
C-rod trav.mm : 10.80...11.00

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 500  
Speed 1/min : 950  
Del.quantity cm3/ : 119.0...122.0  
1000H.: (116.5...124.5)  
Speed 1/min : 750  
Dispersion cm3/ : 4.00  
1000H.: (4.00)  
Speed 1/min : 500  
Del.quantity cm3/ : -  
1000H.: (66.0...74.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.10  
Speed 1/min : 1145...1155

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 190.0...210.0  
1000H.: (185.0...215.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 600  
Contr.-rod trav.mm: 4.40...4.60  
Del.quantity cm3/ : 11.0...15.0  
1000H.: (8.5...17.5)  
Dispersion cm3/ : 7.00  
1000H.: (9.00)

#### Remarks:

: JOHN DEERE  
: #RE32396

Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 B  
 Edition : 06.11.87  
 Superceeded : 11.85  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 276 049  
 Injection pump  
 Pump designation : PES6A100D410RS3034  
 EP type number : 0 411 206 016  
 Governor  
 Governor design. : RSV600...1100A2C2080  
 L  
 Governor no. : 9 420 234 159

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

1st version kW : 152.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.95...2.05  
 : (1.90...2.10)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 12.9...13.1

100H.: (12.7...13.3)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 600.0

Contr.-rod trav. m: 4.5...4.7

Del.quantity cm3/ : 1.3...1.7

100H.: (1.1...1.8)

Dispersion cm3/ : 0.4

100H.: (0.7)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 129.0...131.0

1000H.: (127.0...133.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 33...41

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1195...1225

4th speed 1/min : 1250

C-rod trav.mm : 0.30...1.40

## LOWEST RATED SPEED I

Control-lever

position degrees: 15...24  
Setting point w/out aux. spring  
Speed 1/min : 600  
Contr.-rod trav.mm: 4.1

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 600  
C-rod trav.mm : 4.00...4.20  
C-rod trav.mm : 2.00  
Speed 1/min : 635...695

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : -  
Contr.-rod trav.mm: 8.60...8.70

### Measurement

Speed 1/min : 500  
1st pressure hPa : 333  
C-rod trav.mm : 11.55...11.65  
2nd pressure hPa : 233  
C-rod trav.mm : 10.75...11.15

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : -  
1000H.: (65.0...75.0)

## ROTATIONAL-SPEED LIMITATION

### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.70  
Speed 1/min : 1145...1155

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 170.0...190.0  
1000H.: (165.0...195.0)  
Contr.-rod trav.mm: 19.00...21.00

## HIGH IDLE

D15

### 1st version

Speed 1/min : 1200  
Contr.-rod trav.mm: 4.70...4.90

## LOW IDLE

Speed 1/min : 600  
Contr.-rod trav.mm: 4.50...4.70  
Del.quantity cm3/ : 13.0...17.0  
1000H.: (11.5...18.5)  
Dispersion cm3/ : 4.00  
1000H.: (7.50)

Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SSC 38,1 A1  
 Edition : 06.11.87  
 Superceeded : 9.10.87  
 Calibrating oil : ISO-4113

Combination no. : 0 401 830 712

Injection pump  
 Pump designation : PE12P130AS20/6LS3090  
 -3  
 EP type number : 0 411 830 706  
 Governor  
 Governor design. : RQV300...750PA874  
 Governor no. : 0 421 813 663

Customer-spec. information  
 Customer : SSCM

Engine : VD 25-V 12

1st version kW : 632.0  
 Speed 1/min: 1500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Cam sequence : 1- 8- 5- 10- 3- 7-  
 : 6- 11- 2- 9- 4- 12

SD ang. spacing°CS: 0-37.5-60-97.5-120-  
 : 157.5-180-217.5-240-  
 SD ang. spacing°CS: 277.5-300-337.5  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 13.80...13.90

Del.quantity cm3/ : 34.8...35.1

100H.: (34.4...35.4)

Dispersion cm3/ : 0.6

100H.: (1.0)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 5.9...6.3

Del.quantity cm3/ : 1.7...2.3

100H.: (1.3...2.7)

Dispersion cm3/ : 1.0

100H.: (1.4)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 600

Sleeve travel mm: 5.10...5.50

3rd speed 1/min: 750

Sleeve travel mm: 7.40...7.80

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 780

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 750

Del.quantity cm3/ : 348.0...351.0

1000H.: (344.5...354.5)

Dispersion cm3/ : 6.00  
1000H.: (10.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 62...70

Testing:  
1st c-rod trav.mm : 12.80  
Speed 1/min : 790...800  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 850...880  
4th speed 1/min : 950  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 7...15

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.60  
Speed 1/min : 300  
C-rod trav.mm : 5.90...6.30

CONSTANT REGULATION  
Speed 1/min : 330...440

#### SWITCH-OVER POINT

Speed 1/min : 250 (270)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.80  
Speed 1/min : 790...800

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 5.90...6.30  
Del.quantity cm3/ : 17.0...23.0  
1000H.: (13.0...27.0)  
Dispersion cm3/ : 10.00  
1000H.: (14.00)

Remarks:

APPLICATION  
Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 9,8 B 4  
 Edition : 06.11.87  
 Superseded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 846 497  
 Injection pump  
 Pump designation : PE6P120A32ORS438-1  
 EP type number : 0 411 826 133  
 Governor  
 Governor design. : RQV275...1200PA648-2  
 Governor no. : 0 421 813 490

Customer-spec. information  
 Customer : RVI

Engine : MIDS062030

1st version kW : 150.0  
 Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1200

Del.quantity cm3/ : 13.3...13.5

100H.: (13.0...13.8)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 275.0

Contr.-rod trav. m: 5.1...5.3

Del.quantity cm3/ : 1.5...2.1  
100H.: (1.2...2.4)

Dispersion cm3/ : 0.8  
100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 275  
Sleeve travel mm: 1.20...1.40

2nd speed 1/min: 450  
Sleeve travel mm: 3.30...4.00

3rd speed 1/min: 850  
Sleeve travel mm: 5.90...6.20

4th speed 1/min: 1200  
Sleeve travel mm: 8.20...8.40

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1230

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Del.quantity cm3/ : 133.0...135.0  
1000H.: (130.0...138.0)

Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Setting point:

Speed 1/min : 1230

Contr.-rod trav.mm: 16.5

Testing:

1st c-rod trav.mm : 9.20

Speed 1/min : 1255...1265

2nd c-rod trav.mm : 3.90

Speed 1/min : 1355...1385

4th speed 1/min : 1500

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 8...16

Setting point w/out aux. spring

Speed 1/min : 275

Contr.-rod trav.mm: 5.0

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.00

Speed 1/min : 275

C-rod trav.mm : 4.90...5.10

#### CONSTANT REGULATION

Speed 1/min : 275...360

#### SWITCH-OVER POINT

Speed 1/min : 195 (215)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 750

Del.quantity cm3/ : 116.0...122.0  
1000H.: (113.0...125.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.20

Speed 1/min : 1255...1265

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 105.0...125.0  
1000H.: (101.0...129.0)



LOW IDLE

Speed 1/min : 275  
Contr.-rod trav.mm: 4.90...5.10

Remarks:

:

Start-of-delivery mark at the "INJ"  
marking

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 10,0 S  
Edition : 06.11.87  
Superceeded : 12.6.87  
Calibrating oil : ISO-4113  
Combination no. : 0 401 846 529  
Injection pump  
Pump designation : PE6P120A32ORS3186  
EP type number : 0 411 826 756  
Governor  
Governor design. : RQV250..1025PA657-13  
Governer no. : 0 421 813 592

Customer-spec. information  
Customer : VOLVO

Engine : TD102F

1st version kW : 220.0  
Speed 1/min: 2050

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
: (2.55...2.75)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.40...11.50

Del.quantity cm3/ : 19.7...19.9

100H.: (19.4...20.2)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 3.9...4.1

Del.quantity cm3/ : 1.7...2.2

100H.: (1.4...2.4)

Dispersion cm3/ : 0.5

100H.: (0.7)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.20...1.30

2nd speed 1/min: 430

Sleeve travel mm: 3.50...3.80

3rd speed 1/min: 700

Sleeve travel mm: 6.40...6.60

4th speed 1/min: 900

Sleeve travel mm: 6.40...6.60

5th speed 1/min: 1080

Sleeve travel mm: 8.30...8.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1080

Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 1000

Del.quantity cm3/ : 197.0...199.0  
1000H.: (194.0...202.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 58...66

Testing:  
1st c-rod trav.mm : 10.40  
Speed 1/min : 1055...1065  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1110...1140  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 4...12

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 5.40  
Speed 1/min : 250  
C-rod trav.mm : 3.90...4.10

#### CONSTANT REGULATION

Speed 1/min : 250...350

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 11.40...11.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.80...9.00  
2nd pressure hPa : 60  
C-rod trav.mm : 9.20...9.30  
3rd pressure hPa : 400  
C-rod trav.mm : 11.10...11.30

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 143.0...145.0  
1000H.: (140.0...148.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.40  
Speed 1/min : 1055...1065

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 3.90...4.10  
Del.quantity cm3/ : 17.0...22.0  
1000H.: (14.5...24.5)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 7,1 A 3  
 Edition : 02.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 846 534  
 Injection pump  
 Pump designation : PE6P110A320RS483-4  
 EP type number : 0 411 816 172  
 Governor  
 Governor design. : RQV250...1200PA499-5  
 Governor no. : 0 421 813 577

Customer-spec. information  
 Customer : VOLVO

Engine : TD71FD

1st version kW : 158.0  
 Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.80...11.90

Del.quantity cm3/ : 12.0...12.2

100H.: (11.7...12.5)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 1.6...2.0

100H.: (-)

Dispersion cm3/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 380

Sleeve travel mm: 2.30...2.60

3rd speed 1/min: 500

Sleeve travel mm: 2.90...3.30

4th speed 1/min: 1260

Sleeve travel mm: 7.70...7.90

5th speed 1/min: 1400

Sleeve travel mm: 9.00...9.30

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1330

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 120.0...122.0

1000H.: (117.0...125.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 54...62

### Testing:

1st c-rod trav.mm : 10.80  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1390...1420  
4th speed 1/min : 1550  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 6...14

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.80  
Speed 1/min : 250  
C-rod trav.mm : 5.30...5.50

## CONSTANT REGULATION

Speed 1/min : 250...480

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

#### Setting

Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 11.80...11.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 10.20...10.30  
2nd pressure hPa : 470  
C-rod trav.mm : 11.60...11.70

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 85.0...88.0  
1000H.: (82.0...91.0)

## ROTATIONAL-SPEED LIMITATION

### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.80  
Speed 1/min : 1260...1270

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 170.0...200.0  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 5.30...5.50  
Del.quantity cm3/ : 16.0...20.0  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 12,2 A  
 Edition : 02.11.87  
 Superceeded : 12.6.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 846 827  
 Injection pump  
 Pump designation : PE6P120A32ORS3178  
 EP type number : 0 411 826 752  
 Governor  
 Governor design. : RQV250...950PA657-11  
 Governor no. : 0 421 813 568

Customer-spec. information  
 Customer : VOLVO

Engine : TD122F

1st version kW : 257.0  
 Speed 1/min: 1900

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.00...13.10

Del.quantity cm3/ : 22.9...23.1

100H.: (22.6...23.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 4.6...4.8

Del.quantity cm3/ : 1.7...2.2

100H.: (1.4...2.5)

Dispersion cm3/ : 0.5

100H.: (0.7)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.00...1.40

2nd speed 1/min: 450

Sleeve travel mm: 3.60...4.20

3rd speed 1/min: 700

Sleeve travel mm: 6.40...6.60

4th speed 1/min: 985

Sleeve travel mm: 8.20...8.40

5th speed 1/min: 1060

Sleeve travel mm: 9.60...10.00

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1000

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 229.0...231.0  
1000H.: (226.0...234.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 60...68

Testing:  
1st c-rod trav.mm : 12.00  
Speed 1/min : 980...990  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1060...1090  
4th speed 1/min : 1200  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 5...13

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 6.20  
Speed 1/min : 250  
C-rod trav.mm : 4.60...4.80

#### CONSTANT REGULATION

Speed 1/min : 250...380

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 13.00...13.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.80...10.00  
2nd pressure hPa : 100  
C-rod trav.mm : 10.20...10.30  
3rd pressure hPa : 640  
C-rod trav.mm : 12.60...12.80

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 163.0...165.0  
1000H.: (160.0...168.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 12.00  
Speed 1/min : 980...990

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 220.0...260.0  
1000H.: (216.0...264.0)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 4.60...4.80  
Del.quantity cm3/ : 17.5...22.5  
1000H.: (14.5...25.5)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 10,0 S2  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 401 846 836  
Injection pump  
Pump designation : PE6P120A32ORS3186-1  
EP type number : 0 411 826 774  
Governor  
Governor design. : RQV250..1100PA657-14  
Governor no. : 0 421 813 682

Customer-spec. information  
Customer : VOLVO

Engine : TD102FDQ

1st version kW : 232.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
: (2.55...2.75)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700  
-----  
Contr.-rod trav.mm: 11.40...11.50  
-----  
Del. quantity cm3/ : 19.7...19.9  
-----  
100H.: (19.4...20.2)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 250.0  
Contr.-rod trav. m: 3.9...4.1  
Del. quantity cm3/ : 1.7...2.2  
100H.: (1.4...2.4)  
Dispersion cm3/ : 0.5  
100H.: (0.7)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250  
Sleeve travel mm: 1.00...1.40  
2nd speed 1/min: 350  
Sleeve travel mm: 2.20...2.80  
3rd speed 1/min: 700  
Sleeve travel mm: 6.40...6.60  
4th speed 1/min: 1135  
Sleeve travel mm: 7.70...7.90  
5th speed 1/min: 1210  
Sleeve travel mm: 8.90...9.30

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1170  
Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 700  
Charge press. hPa : 1000



Del.quantity cm3/ : 197.0...199.0  
1000H.: (194.0...202.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 56...64

#### Testing:

1st c-rod trav.mm : 10.40  
Speed 1/min : 1130...1140  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1185...1215  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 4...12

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 5.40  
Speed 1/min : 250  
C-rod trav.mm : 3.90...4.10

#### CONSTANT REGULATION

Speed 1/min : 250...360

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

#### Setting

Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 11.40...11.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.60...8.80  
2nd pressure hPa : 80  
C-rod trav.mm : 8.90...9.00  
3rd pressure hPa : 460  
C-rod trav.mm : 11.00...11.20

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 143.0...155.0  
1000H.: (140.0...148.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.40  
Speed 1/min : 1130...1140

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 3.90...4.10  
Del.quantity cm3/ : 17.0...22.0  
1000H.: (14.5...24.5)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### Remarks:

:  
Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ENA i1,9 E  
 Edition : 02.11.87  
 Superceeded : 9.10.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 846 861  
 Injection pump  
 Pump designation : PE6P120A320RS3176-1  
 EP type number : 0 411 826 767  
 Governor  
 Governor design. : RQV250...1050PA808  
 Governor no. : 0 421 813 553

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 AX

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1030  
 -----  
 Contr.-rod trav.mm: 13.40...13.50  
 -----  
 Del.quantity cm3/ : 24.8...25.0  
 -----  
 100H.: (24.5...25.3)  
 -----  
 Dispersion cm3/ : 0.5  
 -----  
 100H.: (0.9)  
 -----  
 2nd speed 1/min: 250.0  
 Contr.-rod trav. m: 3.8...4.0  
 Del.quantity cm3/ : 2.5...3.1  
 100H.: (2.2...3.4)  
 Dispersion cm3/ : 0.8  
 100H.: (1.2)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250  
 Sleeve travel mm: 1.00...1.40  
 2nd speed 1/min: 350  
 Sleeve travel mm: 1.70...2.30  
 3rd speed 1/min: 700  
 Sleeve travel mm: 4.50...5.10  
 4th speed 1/min: 1095  
 Sleeve travel mm: 8.20...8.40  
 5th speed 1/min: 1195  
 Sleeve travel mm: 9.40...9.80

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1110  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1030  
 Charge press. hPa : 900  
 Del.quantity cm3/ : 248.0...250.0  
 1000H.: (245.0...253.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 44...52

Testing:  
1st c-rod trav.mm : 12.40  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1180...1210  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 8...16

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 5.50  
Speed 1/min : 250  
C-rod trav.mm : 3.80...4.00

CONSTANT REGULATION  
Speed 1/min : 250...350

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 13.40...13.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.80...10.20  
2nd pressure hPa : 550  
C-rod trav.mm : 12.60...12.70  
3rd pressure hPa : 280  
C-rod trav.mm : 10.90...11.10

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 900  
Speed 1/min : 650  
Del.quantity cm3/ : 247.0...253.0  
1000H.: (244.0...256.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 158.0...160.0  
1000H.: (155.0...163.0)

E02

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.40  
Speed 1/min : 1090...1100

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 160.0...190.0  
1000H.: (156.0...194.0)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
APPLICATION  
Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEN 10,0 F  
 Edition : 02.11.87  
 Superceeded : 10.85  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 876 738  
 Injection pump  
 Pump designation : PE6P110A32ORS3132  
 EP type number : 0 411 816 742  
 Governor  
 Governor design. : RSV200...1100P1/421-  
 1  
 Governor no. : 0 421 833 154

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TID100K

1st version kW : 225.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.00...13.10

Del.quantity cm3/ : 17.6...17.8

100H.: (17.3...18.1)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 200.0

Contr.-rod trav. m: 3.7...3.9

Del.quantity cm3/ : 1.7...2.1

100H.: (1.4...2.3)

Dispersion cm3/ : 0.3

100H.: (0.6)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...1.00

Governor-spring reload

Notch setting x : 4.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 176.0...178.0

1000H.: (173.0...181.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 53...61

Testing:

1st c-rod trav.mm : 12.00

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1175...1205

4th speed 1/min : 1340  
C-rod trav.mm : 0.30...1.70

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 16...24  
Setting point w/out aux. spring  
Speed 1/min : 200  
Contr.-rod trav.mm: 3.3  
Speed 1/min : 200  
C-rod trav.mm : 3.20...3.40  
C-rod trav.mm : 2.00  
Speed 1/min : 220...280

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.00  
Speed 1/min : 1140...1150

#### LOW IDLE

Speed 1/min : 200  
Contr.-rod trav.mm: 3.70...3.90  
Del.quantity cm3/ : 17.0...21.0  
1000H.: (14.5...23.5)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 12,1 E1  
 Edition : 06.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 876 741  
 Injection pump  
 Pump designation : PE6P120A320RS3153  
 EP type number : 0 411 826 745  
 Governor  
 Governor design. : RSV250...1000P1A305-  
 4  
 Governor no. : 0 421 833 286

Customer-spec. information  
 Customer : VOLVO

Engine : TJD 121 K

1st version kW : 253.0  
 Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

E105

Prestroke mm : 2.60...2.70  
 : (2.55...2.75)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.50...11.60

Del.quantity cm3/ : 22.4...22.7

100H.: (22.2...23.0)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/ : 2.3...2.9

100H.: (2.0...3.2)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 6.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 224.5...227.5

1000H.: (222.0...230.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64

Testing:

1st c-rod trav.mm : 10.50

Speed 1/min : 1020...1030  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1070...1100  
4th speed 1/min : 1240  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 23...31  
Setting point w/out aux. spring  
Speed 1/min : 250  
Contr.-rod trav.mm: 5.0  
Speed 1/min : 250  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 310...370

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 950  
C-rod trav.mm : 11.40...11.70  
2nd speed 1/min : 450  
C-rod trav.mm : 11.40...11.70  
3rd speed 1/min : 250  
C-rod trav.mm : 12.70...13.30

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 10.50  
Speed 1/min : 1020...1030

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,6 P 5  
Edition : 02.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 401 878 711  
Injection pump  
Pump designation : PE8P120A32OLS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RSV650...1150POA823-  
5  
Governor no. : 0 421 833 166

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 206.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 1180

Contr.-rod trav.mm: 9.80...9.90

Del.quantity cm3/ : 14.4...14.6

100H.: (14.1...14.9)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 650.0

Contr.-rod trav. m: 3.4...3.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1180

Del.quantity cm3/ : 144.0...146.0

1000H.: (141.0...149.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 42...50



### Testing:

1st c-rod trav.mm : 8.80  
Speed 1/min : 1210...1220  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1235...1255  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.40

### LOWEST RATED SPEED I

Control-lever  
position degrees: 20...28  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 3.6

### Testing:

Speed 1/min : 100  
Speed 1/min : 650  
C-rod trav.mm : 3.50...3.70  
C-rod trav.mm : 2.00  
Speed 1/min : 655...695

### SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1180  
C-rod trav.mm : 9.80...9.90  
2nd speed 1/min : 950  
C-rod trav.mm : 10.50...10.60  
3rd speed 1/min : 1050  
C-rod trav.mm : 10.10...10.20

### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Speed 1/min : 950  
Del.quantity cm3/ : 162.0...166.0  
1000H.: (159.0...169.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 8.80  
Speed 1/min : 1210...1220

### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

### Remarks:

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 G7  
 Edition : 06.11.87  
 Superceeded : 18.8.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 036 066  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1100PA845  
 Governor no. : 0 421 801 380  
 Cust. part no. : MAN-NR.2-7821

Customer-spec. information  
 Customer : MAN

Engine : D2866 F

1st version kW : 177.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 11.70...11.80

Del.quantity cm3/ : 12.3...12.6

100H.: (12.0...12.8)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 6.0...6.2

Del.quantity cm3/ : 1.5...2.0

100H.: (1.2...2.2)

Dispersion cm3/ : 0.4

100H.: (0.7)

## SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 123.0...126.0

1000H.: (120.5...128.5)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.70

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1230...1260  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 250  
Contr.-rod trav.mm: 6.1

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 7.60  
Speed 1/min : 250  
C-rod trav.mm : 6.00...6.20  
C-rod trav.mm : 2.00  
Speed 1/min : 320...360

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 800  
C-rod trav.mm : 12.20...12.30  
2nd speed 1/min : 1100  
C-rod trav.mm : 12.10...12.30

#### SWITCH-OVER POINT

Speed 1/min : 170 (190)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 1100  
Del.quantity cm3/ : 132.0...138.0  
1000H.: (129.0...141.0)  
Speed 1/min : 500  
Del.quantity cm3/ : 117.0...123.0  
1000H.: (114.0...126.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.70  
Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 110.0...130.0  
1000H.: (106.0...134.0)

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 6.00...6.20

Del.quantity cm3/ : 15.0...20.0  
1000H.: (12.5...22.5)  
Dispersion cm3/ : 4.50  
1000H.: (7.50)

#### Remarks:

: MAN-NR. 2-7821

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A27  
 Edition : 06.11.87  
 Superceeded : 9.3.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 036 068  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA658-22  
 Governor no. : 0 421 801 389

Cust. part no. : MAN-NR.2-7820

Customer-spec. information  
 Customer : MAN

Engine : D2866TOH

1st version kW : 213.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 750  
-----  
Contr.-rod trav.mm: 10.60...10.70  
-----  
Del.quantity cm3/ : 19.1...19.3  
-----  
100H.: (18.8...19.6)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 4.7...4.9  
Del.quantity cm3/ : 1.2...1.8  
100H.: (0.9...2.1)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed 1/min: 650  
Contr.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 750  
Charge press. hPa : 1000  
Del.quantity cm3/ : 191.0...193.0  
1000H.: (188.0...196.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 650  
Contr.-rod trav.mm: 20.0

## Testing:

1st c-rod trav.mm : 9.30  
Speed 1/min : 1145...1160  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1180...1210  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 4.8

## Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.30  
Speed 1/min : 300  
C-rod trav.mm : 4.70...4.90  
C-rod trav.mm : 2.00  
Speed 1/min : 340...380

## TORQUE CONTROL

Dimension a mm : 0.30  
Torque-control curve - 1st version  
1st speed 1/min : 750  
C-rod trav.mm : 11.10...11.20  
2nd speed 1/min : 1100  
C-rod trav.mm : 10.30...10.40  
3rd speed 1/min : 980  
C-rod trav.mm : 10.80...11.00  
4th speed 1/min : 1025  
C-rod trav.mm : 10.40...10.70

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

## 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 10.60...10.70

## Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 8.80...8.90  
2nd pressure hPa : 240  
C-rod trav.mm : 9.10...9.20  
3rd pressure hPa : 520  
C-rod trav.mm : 10.00...10.40

## SWITCH-OVER POINT

Speed 1/min : 220 (240)

## FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1000  
Speed 1/min : 1100  
Del.quantity cm3/ : 193.0...197.0  
1000H.: (190.0...200.0)  
Charge press. hPa : 1000  
Speed 1/min : 650  
Del.quantity cm3/ : 184.0...190.0  
1000H.: (181.0...193.0)  
Charge press. hPa : 520  
Speed 1/min : 500  
Del.quantity cm3/ : 168.0...180.0  
1000H.: (165.0...183.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 128.0...130.0  
1000H.: (125.0...133.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.30  
Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 225.0...245.0  
1000H.: (221.0...249.0)

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000H.: (9.0...21.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

: MAN-NR. 2-7820

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A29  
Edition : 06.11.87  
Superceeded : 26.6.87  
Calibrating oil : ISO-4113  
Combination no. : 0 402 036 070  
Injection pump  
Pump designation : PES6P120A720/3LS470-3  
EP type number : 0 412 026 051  
Governor  
Governor design. : RQV300...1100PA707-2  
Governor no. : 0 421 813 638

Customer-spec. information  
Customer : MAN

Engine : D2866LUL/290

1st version kW : 213.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 10.60...10.70

Del.quantity cm3/ : 18.3...18.5  
100H.: (18.0...18.8)

Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 300.0  
Contr.-rod trav. m: 5.4...5.6  
Del.quantity cm3/ : 1.2...1.8  
100H.: (0.9...2.1)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
Sleeve travel mm: 1.60...1.80  
2nd speed 1/min: 475  
Sleeve travel mm: 3.10...3.50  
3rd speed 1/min: 850  
Sleeve travel mm: 5.50...5.90  
4th speed 1/min: 1100  
Sleeve travel mm: 7.40...7.60

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1175  
Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 750  
Charge press. hPa : 1000  
Del.quantity cm3/ : 183.0...185.0  
1000H.: (180.0...188.0)

Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 48...56

Testing:  
1st c-rod trav.mm : 9.60  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1225...1255  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 15...23

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.00  
Speed 1/min : 300  
C-rod trav.mm : 5.40...5.60

CONSTANT REGULATION  
Speed 1/min : 310...410

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 10.60...10.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.80...8.90  
2nd pressure hPa : 210  
C-rod trav.mm : 9.10...9.20  
3rd pressure hPa : 375  
C-rod trav.mm : 9.90...10.20

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1000  
Speed 1/min : 1100

Del.quantity cm3/ : 192.0...198.0  
1000H.: (189.0...201.0)  
Charge press. hPa : 1000  
Speed 1/min : 650  
Del.quantity cm3/ : 172.0...178.0  
1000H.: (169.0...181.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 119.0...121.0  
1000H.: (116.0...124.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 9.60  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 225.0...245.0  
1000H.: (221.0...249.0)

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 5.40...5.60  
Del.quantity cm3/ : 12.0...18.0  
1000H.: (9.0...21.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A30  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 0 402 036 071

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA813-3  
Governor no. : 0 421 801 422

Customer-spec. information  
Customer : MAN

Engine : D2866T0H

1st version kW : 213.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

#### BASIC SETTING

1st speed 1/mi: 750  
-----  
Contr.-rod trav.mm: 10.60...10.70  
-----  
Del.quantity cm3/ : 19.1...19.3  
                  100H.: (18.8...19.6)  
-----  
Dispersion cm3/ : 0.5  
                  100H.: (0.9)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 4.9...5.1  
Del.quantity cm3/ : 1.2...1.8  
                  100H.: (0.9...2.1)  
Dispersion cm3/ : 0.8  
                  100H.: (1.2)

#### SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed 1/min: 750  
Contr.-rod travelmm: 14.70...16.30

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 750  
Charge press. hPa : 1000  
Del.quantity cm3/ : 191.0...193.0  
                  1000H.: (188.0...196.0)  
Dispersion cm3/ : 5.00  
                  1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Setting point:  
Speed 1/min : 750  
Contr.-rod trav.mm: 15.5

Testing:  
1st c-rod trav.mm : 9.30

Speed 1/min : 1145...1160  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1180...1210  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 5.0

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.50  
Speed 1/min : 300  
C-rod trav.mm : 4.90...5.10  
C-rod trav.mm : 2.00  
Speed 1/min : 385...425

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 10.30...10.40  
2nd speed 1/min : 750  
C-rod trav.mm : 11.20...11.30  
3rd speed 1/min : 980  
C-rod trav.mm : 10.90...11.10  
4th speed 1/min : 1030  
C-rod trav.mm : 10.40...10.70

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 10.60...10.70

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 8.80...8.90  
2nd pressure hPa : 240  
C-rod trav.mm : 9.10...9.20  
3rd pressure hPa : 520  
C-rod trav.mm : 10.00...10.40

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1000

Speed 1/min : 1100  
Del.quantity cm3/ : 193.0...197.0  
1000H.: (190.0...200.0)  
Charge press. hPa : 1000  
Speed 1/min : 650  
Del.quantity cm3/ : 184.0...190.0  
1000H.: (181.0...193.0)  
Charge press. hPa : 520  
Speed 1/min : 500  
Del.quantity cm3/ : 168.0...180.0  
1000H.: (165.0...183.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 119.0...121.0  
1000H.: (116.0...124.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 9.30  
Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 225.0...245.0  
1000H.: (221.0...249.0)

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 4.90...5.10  
Del.quantity cm3/ : 12.0...18.0  
1000H.: (9.0...21.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 68  
 Edition : 06.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 036 072  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1100PA845-1  
 Governor no. : 0 421 801 423

Customer-spec. information  
 Customer : MAN

Engine : D2566IUH/205

1st version kW : 150.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 6

#### BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 10.30...10.40

Del.quantity cm3/ : 9.1...9.4

100H.: (8.8...9.6)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.5...5.7

Del.quantity cm3/ : 1.5...2.0  
100H.: (1.2...2.2)

Dispersion cm3/ : 0.4  
100H.: (0.7)

#### SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 91.0...94.0  
1000H.: (88.5...96.5)

Dispersion cm3/ : 4.00  
1000H.: (7.50)

#### HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 9.30

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1205...1235

4th speed 1/min : 1350

E20

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 250

Contr.-rod trav.mm: 5.6

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.10

Speed 1/min : 250

C-rod trav.mm : 5.50...5.70

C-rod trav.mm : 2.00

Speed 1/min : 315...355

#### TORQUE CONTROL

Dimension a mm : -

Torque-control curve - 1st version

1st speed 1/min : 800

C-rod trav.mm : 10.80...10.90

2nd speed 1/min : 1100

C-rod trav.mm : 10.70...10.90

#### SWITCH-OVER POINT

Speed 1/min : 170 (190)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 1100

Del.quantity cm3/ : 103.0...107.0

1000H.: (100.0...110.0)

Speed 1/min : 500

Del.quantity cm3/ : 81.0...85.0

1000H.: (78.0...88.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.30

Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 110.0...130.0

1000H.: (106.0...134.0)

#### LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 5.50...5.70

Del.quantity cm3/ : 15.0...20.0

1000H.: (12.5...22.5)

Dispersion    cm<sup>3</sup>/ : 4.50  
                 1000H.: (7.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 9,8 A 8  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 0 402 046 332

Injection pump  
Pump designation : PES6P120A32ORS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/1050PA844  
Governor no. : 0 421 801 379

Customer-spec. information  
Customer : RVI

Engine : MIPS062045B

1st version kW : 176.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1050  
-----  
Contr.-rod trav.mm: 9.20...9.30  
-----  
Del.quantity cm3/ : 16.1...13.6  
                  100H.: (15.8...13.9)  
-----  
Dispersion cm3/ : 0.5  
                  100H.: (0.9)  
-----  
2nd speed 1/min: 275.0  
Contr.-rod trav. m: 4.9...5.1  
Del.quantity cm3/ : 1.7...2.3  
                  100H.: (1.4...2.6)  
Dispersion cm3/ : 0.8  
                  100H.: (1.2)

#### SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed 1/min: 600  
Contr.-rod travelmm: 19.20...20.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1050  
Charge press. hPa : 700  
Del.quantity cm3/ : 161.0...136.0  
                  1000H.: (158.0...139.0)  
Dispersion cm3/ : 5.00  
                  1000H.: (9.00)

#### HIGHEST RATED SPEED

##### 1st version

Setting point:  
Speed 1/min : 600  
Contr.-rod trav.mm: 20.0

##### Testing:

1st c-rod trav.mm : 8.20  
Speed 1/min : 1110...1120  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1170...1200

4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 275  
Contr.-rod trav.mm: 5.6

##### Testing:

Speed 1/min : 200  
C-rod trav.mm min : 5.50  
Speed 1/min : 275  
C-rod trav.mm : 3.50...3.70  
C-rod trav.mm : 2.00  
Speed 1/min : 300...340

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1050  
C-rod trav.mm : 9.70...9.80  
2nd speed 1/min : 700  
C-rod trav.mm : 9.70...9.90

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 9.20...9.300

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.20...8.30  
2nd pressure hPa : 260  
C-rod trav.mm : 8.90...9.00  
3rd pressure hPa : 230  
C-rod trav.mm : 8.40...8.60

#### SWITCH-OVER POINT

Speed 1/min : 195 (215)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 700  
Speed 1/min : 700  
Del.quantity cm3/ : 149.0...155.0  
                  1000H.: (146.0...158.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 103.0...105.0  
                  1000H.: (100.0...108.0)



## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.20

Speed 1/min : 1110...1120

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm<sup>3</sup>/ : 140.0...160.0

1000H.: (136.0...164.0)

## LOW IDLE

Speed 1/min : 275

Contr.-rod trav.mm: 3.50...3.70

Remarks:

:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

## APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 W  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 046 792  
Injection pump  
Pump designation : PES6P110A72ORS3104  
EP type number : 0 412 016 712  
Governor  
Governor design. : RQV400...1100PA882  
Governor no. : 0 421 813 681

Customer-spec. information  
Customer : KHD

Engine : BF6LS13R

1st version kW : 176.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100  
-----  
Contr.-rod trav.mm: 12.90...13.00  
-----  
Del.quantity cm3/ : 14.1...14.3  
-----  
100H.: (13.8...14.6)  
-----  
Dispersion cm3/ : 0.4  
-----  
100H.: (0.7)  
-----  
2nd speed 1/min: 400.0  
Contr.-rod trav. m: 5.7...5.9  
Del.quantity cm3/ : 1.2...1.8  
100H.: (1.0...2.0)  
Dispersion cm3/ : 0.4  
100H.: (0.7)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 400  
Sleeve travel mm: 0.80...1.20  
2nd speed 1/min: 600  
Sleeve travel mm: 2.80...3.60  
3rd speed 1/min: 900  
Sleeve travel mm: 5.60...6.20  
4th speed 1/min: 1140  
Sleeve travel mm: 8.20...8.40  
5th speed 1/min: 1230  
Sleeve travel mm: 9.50...9.90

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1150  
Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1100  
Charge press. hPa : 700  
Del.quantity cm3/ : 141.0...143.0  
1000H.: (138.0...146.0)  
Dispersion cm3/ : 4.00  
1000H.: (7.50)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 57...65

### Testing:

1st c-rod trav.mm : 11.90  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1220...1250  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 8...16

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 7.20  
Speed 1/min : 400  
C-rod trav.mm : 5.70...5.90

## CONSTANT REGULATION

Speed 1/min : 400...650

## TORQUE CONTROL

Dimension a mm : 0.40  
Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 12.90...13.00  
2nd speed 1/min : 650  
C-rod trav.mm : 13.30...13.40  
3rd speed 1/min : 750  
C-rod trav.mm : 13.10...13.30  
4th speed 1/min : 950  
C-rod trav.mm : 12.90...13.10

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

#### Setting

Speed 1/min : 450  
Pressure hPa : 700  
Contr.-rod trav.mm: 13.30...13.40

#### Measurement

Speed 1/min : 450

1st pressure hPa : -  
C-rod trav.mm : 12.30...12.50  
2nd pressure hPa : 400  
C-rod trav.mm : 13.10...13.20  
3rd pressure hPa : 360  
C-rod trav.mm : 12.70...12.90

## SWITCH-OVER POINT

E26

Speed 1/min : 320 (340)

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : 700  
Speed 1/min : 650  
Del.quantity cm3/ : 148.0...152.0  
1000H.: (145.0...155.0)  
Charge press. hPa : -  
Speed 1/min : 450  
Del.quantity cm3/ : 123.0...125.0  
1000H.: (120.0...128.0)

## ROTATIONAL-SPEED LIMITATION

### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.90  
Speed 1/min : 1140...1150

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 170.0...200.0  
1000H.: (166.0...204.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

## APPLICATION

Wheel loader

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 14,9 F1  
Edition : 10.04.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 048 046  
Injection pump  
Pump designation : PES8P120A32ORS507  
EP type number : 0 412 028 023  
Governor  
Governor design. : RQV275...1050PA665-2  
Governor no. : 0 421 813 623

Customer-spec. information  
Customer : RVI

Engine : MIVRO83530

1st version kW : 268.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 8- 4- 2- 7- 3-  
                  6- 5

SD ang. spacing°CS: 0-45-90-135-180-225-  
                                  270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1050

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 18.2...18.4

100H.: (17.9...18.7)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 275.0

Contr.-rod trav. m: 5.6...5.8

Del.quantity cm3/ : 1.9...2.5

100H.: (1.6...2.8)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 275

Sleeve travel mm: 1.30...1.70

2nd speed 1/min: 400

Sleeve travel mm: 3.00...3.50

3rd speed 1/min: 525

Sleeve travel mm: 4.00...4.40

4th speed 1/min: 650

Sleeve travel mm: 4.90...5.30

5th speed 1/min: 1050

Sleeve travel mm: 7.60...7.80

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1140

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1050

Charge press. hPa : 700

Del.quantity cm3/ : 182.0...184.0  
1000H.: (179.0...187.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 10.00  
Speed 1/min : 1105...1115  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1195...1225  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 7...15

Testing:  
Speed 1/min : 200  
C-rod trav.mm min : 7.40  
Speed 1/min : 275  
C-rod trav.mm : 5.60...5.80

#### CONSTANT REGULATION

Speed 1/min : 290...405

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 11.00...11.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.40...9.60  
2nd pressure hPa : 150  
C-rod trav.mm : 10.60...10.70  
3rd pressure hPa : 110  
C-rod trav.mm : 9.80...10.00

#### SWITCH-OVER POINT

Speed 1/min : 195 (215)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

E28

Charge press. hPa : 700  
Speed 1/min : 650  
Del.quantity cm3/ : 165.0...171.0  
1000H.: (162.0...174.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 116.0...118.0  
1000H.: (113.0...121.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1105...1115

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

#### LOW IDLE

Speed 1/min : 275  
Contr.-rod trav.mm: 5.60...5.80  
Del.quantity cm3/ : 19.0...25.0  
1000H.: (16.0...28.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

:  
Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

## LOWEST RATED SPEED I

Control-lever

position degrees: 18...26

Setting point w/out aux. spring

Speed 1/min : 425

Contr.-rod trav.mm: 5.4

### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 425

C-rod trav.mm : 5.60...6.00

C-rod trav.mm : 2.00

Speed 1/min : 600...660

## TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 10.20...10.30

2nd speed 1/min : 750

C-rod trav.mm : 11.40...11.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting

Speed 1/min : 500

Pressure hPa : -

Contr.-rod trav.mm: 9.35...9.55

### Measurement

Speed 1/min : 500

1st pressure hPa : 200

C-rod trav.mm : 11.00...11.10

2nd pressure hPa : 80

C-rod trav.mm : 9.70...10.10

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : 500

Speed 1/min : 750

Del.quantity cm3/ : 127.5...130.5

1000H.: (125.0...133.0)

Charge press. hPa : -

Speed 1/min : 750

Dispersion cm3/ : 4.00

1000H.: (4.00)

## ROTATIONAL-SPEED LIMITATION

### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.20

Speed 1/min : 1145...1155

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 190.0...210.0

1000H.: (185.0...215.0)

Contr.-rod trav.mm: 19.00...21.00

## HIGH IDLE

### 1st version

Speed 1/min : 1190

Contr.-rod trav.mm: 5.70...5.90

## LOW IDLE

Speed 1/min : 425

Contr.-rod trav.mm: 5.80...6.00

Del.quantity cm3/ : 24.0...28.0

1000H.: (21.5...30.5)

Dispersion cm3/ : 7.00

1000H.: (9.00)

### Remarks:

: JOHN DEERE # 16418

Adjustment without torque-control

spring retainer with 1 mm less

Start-of-delivery mark = 15.5° after

start of delivery cyl. 1. rque-control  
pring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 10,6 D  
Edition : 12.11.87  
Superceeded : 7.86  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 076 038  
  
Injection pump  
Pump designation : PES6P110A72ORS296  
Governor  
Governor design. : RSV400...900PO/44ODR

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.5

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Prestroke mm : 2,75...2,85  
: (2,70...2,90)  
Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0,5 (0,75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 900  
-----  
Contr.-rod trav.mm: 11.60...11.70  
-----  
Del.quantity cm3/ : 16.0...16.2  
-----  
100H.: (-)  
-----  
Dispersion cm3/ : 0.4  
-----  
100H.: (-)  
-----  
2nd speed 1/min: 400  
Contr.-rod trav. m: 6.20...6.40  
Del.quantity cm3/ : 1.9...2.5  
100H.: (-)  
Dispersion cm3/ : 0.4  
100H.: (-)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Cont.-rod travelmm: 0.30...1.00

Governor-spring reload  
Notch setting x : -

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 900  
Charge press. hPa : 800  
Del.quantity cm3/ : 160.0...162.0  
1000H.: (156.0...166.0)  
Dispersion cm3/ : 4.0  
1000H.: (-)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 38...46

Testing:  
1st c-rod trav.mm : 10.60  
Speed 1/min : 950...960  
2nd c-rod trav.mm : 6.20  
Speed 1/min : 985...1015  
3rd c-rod trav.mm : 0.20...1.30  
Speed 1/min : 800  
4th speed 1/min : 1100  
C-rod trav.mm : 0.30...1.70

LOWEST RATED SPEED I  
Control-lever

position degrees: 21...29  
Setting point w/out aux. spring  
Speed 1/min : 400  
Contr.-rod trav.mm: 5.7

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 21.00  
Speed 1/min : 400  
C-rod trav.mm : 6.10...6.30  
C-rod trav.mm : 2.00  
Speed 1/min : 470...530

TORQUE CONTROL  
Torque-control curve - 1st version  
1st speed 1/min : 900  
C-rod trav.mm : 11.55...11.60  
2nd speed 1/min : 700  
C-rod trav.mm : 12.10...12.30  
3rd speed 1/min : 650  
C-rod trav.mm : 12.45...12.55  
4th speed 1/min : 550  
C-rod trav.mm : 12.80

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 550  
Pressure hPa : 420  
Contr.-rod trav.mm: 11.25...11.35

Measurement  
Speed 1/min : 550  
1st pressure hPa : 570  
C-rod trav.mm : 12.28...12.32

#### SWITCH-OVER POINT

Speed 1/min : 400...750

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 800  
Speed 1/min : 650  
Del.quantity cm3/ : 177.0...180.0  
1000H.: (171.0...186.0)  
Dispersion cm3/ : -  
1000H.: (-)  
Charge press. hPa : -  
Speed 1/min : 550  
Del.quantity cm3/ : 135.0...141.0  
1000H.: (129.0...147.0)  
Dispersion cm3/ : -  
1000H.: (-)

F02

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.60  
Speed 1/min : 950...960

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 190.0...210.0  
1000H.: (-)

#### HIGH IDLE

1st version  
Speed 1/min : 1000  
Del.quantity cm3/ : 47.0...57.0  
1000H.: (-)

#### LOW IDLE

Speed 1/min : 400  
Del.quantity cm3/ : 19.0...25.0  
1000H.: (-)

Remarks:

Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm





C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 13...21

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 7.0

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.50

Speed 1/min : 350

C-rod trav.mm : 6.90...7.10

C-rod trav.mm : 2.00

Speed 1/min : 360...400

#### SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.20

Speed 1/min : 740...750

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 130.0...150.0

1000H.: (126.0...154.0)

Remarks:

:

Observe VDT-I-420/120

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MTU 39,7 D  
Edition : 4.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 430 011  
Injection pump  
Pump designation : PE12ZW160/12ORS1029/  
11  
EP type number : 0 412 460 002  
Governor  
Governor design. : RQUV750ZWA53R  
Governor no. : 0 422 409 031

Customer-spec. information  
Customer : MTU

Engine : 396

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 40...45  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 027

Outside diameter  
x Wall thickness  
x Length mm : 8,00x2,00x1500

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Prestroke mm : 2.50...2.60  
: (2.45...2.65)  
Contr.-rod trav.mm: 12.0  
Cam sequence : 12-9-4-5-8-11-2-3-10  
-7-6-1

SD ang. spacing°CS: 0-15-60-75-120-135-  
180-195-240-255-300-  
315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 600  
-----  
Contr.-rod trav.mm: 18.00  
-----  
Del.quantity cm3/ : 51.3...52.3  
-----  
100H.: (51.0...52.6)  
-----  
Dispersion cm3/ : 2.2  
-----  
100H.: (3.3)  
-----

2nd speed 1/min: 600  
Contr.-rod trav. m: 9.00  
Del.quantity cm3/ : 14.0...16.0  
100H.: (13.5...16.5)  
Dispersion cm3/ : 1.2  
100H.: (1.8)  
3rd speed 1/min: 300  
Contr.-rod trav.mm: 9.00  
Del.quantity cm3/ : 7.2...9.2  
100H.: (6.7...9.7)  
Dispersion cm3/ : 1.1  
100H.: (1.6)

## SLEEVE POSITION

Control-lever position  
Degree: 49...50  
Speed 1/min: 750  
Contr.-rod travelmm: 18.00

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 67,5...70,5

Testing:  
1st c-rod trav.mm : 18.00  
Speed 1/min : 750  
2nd c-rod trav.mm : 5.00  
Speed 1/min : 780...790  
3rd c-rod trav.mm : 0...0.01  
Speed 1/min : 792...805

Remarks:

Acceleration from start to full load  
with n = 170...250 min.. -1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,1 D  
Edition : 02.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 646 844  
Injection pump  
Pump designation : PE6P120A72ORS7017  
EP type number : 0 412 626 818  
Governor  
Governor design. : RQV200...1000PAS39-7  
Governor no. : 0 421 813 631

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DSC 11 12

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 14.50...14.60

Del.quantity cm3/ : 22.0...22.2

100H.: (21.7...22.5)

Dispersion cm3/ : 0.6

100H.: (0.9)

2nd speed 1/min: 225.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 1.8...2.2

100H.: (1.5...2.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 225

Sleeve travel mm: 1.20...1.60

2nd speed 1/min: 350

Sleeve travel mm: 2.40...3.00

3rd speed 1/min: 650

Sleeve travel mm: 4.50...5.10

4th speed 1/min: 1045

Sleeve travel mm: 8.40...8.60

5th speed 1/min: 1165

Sleeve travel mm: 10.00...10.40

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1050

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 220.0...222.0

1000H.: (217.0...225.0)

Dispersion cm3/ : 6.00

1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 58...66

Testing:

1st c-rod trav.mm : 13.50

Speed 1/min : 1040...1050

2nd c-rod trav.mm : 4.00

Speed 1/min : 1150...1180

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.80

Speed 1/min : 225

C-rod trav.mm : 5.30...5.50

C-rod trav.mm : 2.00

Speed 1/min : 370...430

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 900

Contr.-rod trav.mm: 14.50...14.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 12.40...12.50

2nd pressure hPa : 480

C-rod trav.mm : 14.10...14.20

3rd pressure hPa : 285

C-rod trav.mm : 13.00...13.20

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900

Speed 1/min : 1000

Del.quantity cm3/ : 210.0...218.0

1000H.: (208.0...220.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 169.0...173.0

1000H.: (167.0...175.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 13.50  
Speed 1/min : 1040...1050

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...290.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 225  
Contr.-rod trav.mm: 5.30...5.50  
Del.quantity cm3/ : 18.0...22.0  
1000H.: (15.0...25.0)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

## ADDITIONAL INFORMATION

Check and set without ROB0 diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on August 20, 1987.  
Dumper

Firing sequence of engine:  
1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 11,1 C  
 Edition : 02.11.87  
 Superceeded : 20.8.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 646 845  
 Injection pump  
 Pump designation : PE6P120A72ORS7139  
 EP type number : 0 412 626 819  
 Governor  
 Governor design. : RQV200...1000PA725-2  
 Governor no. : 0 421 813 632

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC11 13

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700  
 -----  
 Contr.-rod trav.mm: 15.20...15.30  
 -----  
 Del.quantity cm3/ : 23.6...23.8  
 -----  
 100H.: (23.3...24.1)  
 -----  
 Dispersion cm3/ : 0.6  
 -----  
 100H.: (0.9)  
 -----

2nd speed 1/min: 225.0  
 Contr.-rod trav. m: 5.5...5.7  
 Del.quantity cm3/ : 1.8...2.2  
 100H.: (1.5...2.5)  
 Dispersion cm3/ : 0.3  
 100H.: (0.6)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 225  
 Sleeve travel mm: 1.20...1.60  
 2nd speed 1/min: 350  
 Sleeve travel mm: 2.40...3.00  
 3rd speed 1/min: 650  
 Sleeve travel mm: 4.50...5.10  
 4th speed 1/min: 1045  
 Sleeve travel mm: 8.40...8.60  
 5th speed 1/min: 1170  
 Sleeve travel mm: 10.10...10.50

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1040  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 700  
 Charge press. hPa : 900  
 Del.quantity cm3/ : 236.0...238.0  
 1000H.: (233.0...241.0)  
 Dispersion cm3/ : 6.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 59...67

Testing:  
1st c-rod trav.mm : 14.20  
Speed 1/min : 1040...1050  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1165...1195  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 7...15

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.00  
Speed 1/min : 225  
C-rod trav.mm : 5.50...5.70  
C-rod trav.mm : 2.00  
Speed 1/min : 360...420

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 15.20...15.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 12.40...12.50  
2nd pressure hPa : 535  
C-rod trav.mm : 14.60...14.70  
3rd pressure hPa : 290  
C-rod trav.mm : 13.10...13.30

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 900  
Speed 1/min : 1000  
Del.quantity cm3/ : 226.0...234.0  
1000H.: (224.0...236.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 169.0...173.0  
1000H.: (167.0...175.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 14.20  
Speed 1/min : 1040...1050

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...290.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 225  
Contr.-rod trav.mm: 5.50...5.70  
Del.quantity cm3/ : 18.0...22.0  
1000H.: (15.0...25.0)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

## ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.



Test specifications approved by Scania  
on August 20, 1987.  
Start of delivery - engine: 15° before  
TDC  
Firing sequence of engine:  
1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 E 1  
Edition : 09.03.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 648 831  
Injection pump  
Pump designation : PE8P120A32OLS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..10SOPA842-2  
Governor no. : 0 421 813 589

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Contr.-rod trav.mm: 20.00...21.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
  270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 600  
-----  
Contr.-rod trav.mm: 14.50...14.70  
-----  
Del.quantity cm3/ : 21.2...21.4  
-----  
100H.: (20.9...21.7)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----

2nd speed 1/min: 350.0  
Contr.-rod trav. m: 5.7...5.9  
Del.quantity cm3/ : 1.6...2.2  
100H.: (1.3...2.5)  
Dispersion cm3/ : 0.6  
100H.: (1.0)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.90...2.10  
2nd speed 1/min: 700  
Sleeve travel mm: 4.00...4.40  
3rd speed 1/min: 1100  
Sleeve travel mm: 6.80...7.20  
4th speed 1/min: 1200  
Sleeve travel mm: 8.30...8.70

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1150  
Contr.-rod travelmm: 16.50...18.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 600  
Charge press. hPa : 750  
Del.quantity cm3/ : 212.0...214.0  
1000H.: (209.0...217.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 58...66

Testing:  
1st c-rod trav.mm : 14.20  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1175...1205  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 10...18

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.40  
Speed 1/min : 350  
C-rod trav.mm : 5.70...5.90

#### CONSTANT REGULATION

Speed 1/min : 350...550

#### TORQUE CONTROL

2nd speed 1/min : 1050  
C-rod trav.mm : 15.20...15.40  
3rd speed 1/min : 975  
C-rod trav.mm : 15.40...15.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 750  
Contr.-rod trav.mm: 14.50...14.70

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
C-rod trav.mm : 12.20...12.40  
2nd pressure hPa : 550  
C-rod trav.mm : 13.60...13.80  
3rd pressure hPa : 900  
C-rod trav.mm : 14.70...14.80  
4th pressure hPa : 1250

C-rod trav.mm : 15.50...15.70  
5th pressure hPa : 150  
C-rod trav.mm : 11.20...11.40

#### SWITCH-OVER POINT

Speed 1/min : 270 (290)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 1250  
Speed 1/min : 1050  
Del.quantity cm3/ : 227.0...230.0  
1000H.: (224.0...233.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1250  
Speed 1/min : 900  
Del.quantity cm3/ : 238.0...242.0  
1000H.: (235.0...245.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1250  
Speed 1/min : 1050  
Del.quantity cm3/ : 156.0...159.0  
1000H.: (153.0...162.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 150.0...152.0  
1000H.: (147.0...155.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than  
full-load trav.mm: 14.20  
Speed 1/min : 1090...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...260.0  
1000H.: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 E  
Edition : 02.11.87  
Superceeded : 9.3.87  
Calibrating oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump  
Pump designation : PE8P120A32OLS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..1050PA842-3  
Governor no. : 0 421 813 622

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

# START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Contr.-rod trav.mm: 20.00...21.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing<sup>o</sup>CS: 0-45-90-135-180-225-

270-315  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 14.50...14.70

Del.quantity cm3/ : 21.2...21.4

100H.: (20.9...21.7)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.7...5.9

Del.quantity cm3/ : 1.6...2.2  
100H.: (1.3...2.5)

Dispersion cm3/ : 0.6

100H.: (1.0)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.90...2.10

2nd speed 1/min: 700  
Sleeve travel mm: 4.00...4.40

3rd speed 1/min: 1100  
Sleeve travel mm: 6.80...7.20

4th speed 1/min: 1200  
Sleeve travel mm: 8.30...8.70

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 16.50...18.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

F15

Speed 1/min: 600  
Charge press. hPa : 750  
Del.quantity cm3/ : 212.0...214.0  
1000H.: (209.0...217.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 58...66

Testing:

1st c-rod trav.mm : 14.20

Speed 1/min : 1090...1100

2nd c-rod trav.mm : 4.00

Speed 1/min : 1175...1205

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.50

## LOWEST RATED SPEED I

Control-lever

position degrees: 10...18

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.40

Speed 1/min : 350

C-rod trav.mm : 5.70...5.90

## CONSTANT REGULATION

Speed 1/min : 350...550

## TORQUE CONTROL

2nd speed 1/min : 1050

C-rod trav.mm : 15.20...15.40

3rd speed 1/min : 975

C-rod trav.mm : 15.40...15.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 600

Pressure hPa : 750

Contr.-rod trav.mm: 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 400

C-rod trav.mm : 12.20...12.40

2nd pressure hPa : 550

C-rod trav.mm : 13.60...13.80

3rd pressure hPa : 900

C-rod trav.mm : 14.70...14.80

4th pressure hPa : 1250

C-rod trav.mm : 15.50...15.70  
Sth pressure hPa : 150  
C-rod trav.mm : 11.20...11.40

#### SWITCH-OVER POINT

Speed 1/min : 270 (290)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1250  
Speed 1/min : 1050  
Del.quantity cm3/ : 227.0...230.0  
1000H.: (224.0...233.0)

Dispersion cm3/ : 8.00  
1000H.: (12.0)

Charge press. hPa : 1250  
Speed 1/min : 900  
Del.quantity cm3/ : 238.0...242.0  
1000H.: (235.0...245.0)

Dispersion cm3/ : 8.00  
1000H.: (12.0)

Charge press. hPa : 1250  
Speed 1/min : 1050  
Del.quantity cm3/ : 156.0...159.0  
1000H.: (153.0...162.0)

Dispersion cm3/ : 8.00  
1000H.: (12.0)

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 150.0...152.0  
1000H.: (147.0...155.0)

Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 14.20  
Speed 1/min : 1090...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...260.0  
1000H.: (236.0...264.0)

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 14,0 H1  
 Edition : 02.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 648 836  
 Injection pump  
 Pump designation : PE8P120A920/4LS712ST  
 EP type number : 0 412 628 824  
 Governor  
 Governor design. : RQV200...950PA736-4  
 Governor no. : 0 421 813 646

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC14 03 L09,L10

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 2- 7- 3- 4- 5-  
6- 8

SD ang. spacing<sup>0</sup>CS: 0-45-90-135-180-225-  
270-315  
Tolerance + - <sup>0</sup> : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.50...13.60

Del.quantity cm<sup>3</sup>/ : 21.4...21.6

100H.: (21.1...21.9)

Dispersion cm<sup>3</sup>/ : 0.6

100H.: (0.9)

2nd speed 1/min: 225.0

Contr.-rod trav. m: 4.9...5.1

Del.quantity cm<sup>3</sup>/ : 1.6...2.0

100H.: (1.4...2.2)

Dispersion cm<sup>3</sup>/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 225

Sleeve travel mm: 1.10...1.50

2nd speed 1/min: 350

Sleeve travel mm: 2.30...2.90

3rd speed 1/min: 650

Sleeve travel mm: 4.30...4.90

4th speed 1/min: 995

Sleeve travel mm: 7.50...7.70

5th speed 1/min: 1125

Sleeve travel mm: 9.00...9.40

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1070

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm<sup>3</sup>/ : 214.0...216.0

1000H.: (211.0...219.0)

Dispersion cm<sup>3</sup>/ : 6.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 54...62

Testing:

1st c-rod trav.mm : 12.50

Speed 1/min : 990...1000

2nd c-rod trav.mm : 4.00

Speed 1/min : 1110...1140

4th speed 1/min : 1250

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 6...14

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.40

Speed 1/min : 225

C-rod trav.mm : 4.90...5.10

C-rod trav.mm : 2.00

Speed 1/min : 340...400

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 900

Contr.-rod trav.mm: 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 10.70...10.80

2nd pressure hPa : 445

C-rod trav.mm : 12.90...13.00

3rd pressure hPa : 325

C-rod trav.mm : 11.40...11.60

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 900

Speed 1/min : 950

Del.quantity cm<sup>3</sup>/ : 203.0...211.0

1000H.: (201.0...213.0)

Charge press. hPa : -

Speed 1/min : 500



Del.quantity cm3/ : 138.0...142.0  
1000H.: (136.0...144.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 12.50  
Speed 1/min : 990...1000

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...290.0  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 225  
Contr.-rod trav.mm: 4.90...5.10  
Del.quantity cm3/ : 16.0...20.0  
1000H.: (14.0...22.0)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on August 20, 1987.  
Start of delivery - engine: 16° before  
TDC  
Engine firing sequence: 1-5-4-2-6-3-7-8

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 18,3 L 1  
Edition : 02.11.87  
Superceeded : 27.3.87  
Calibrating oil : ISO-4113

Combination no. : 0 402 649 801

Injection pump  
Pump designation : PE10P120A320LS7809-1  
EP type number : 0 412 629 801  
Governor  
Governor design. : RQ300/1050PA717-1  
Governor no. : 0 421 801 396

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM443 LA

1st version kW : 401.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 20.00...21.00  
Cam sequence : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

SD ang. spacing°CS: 0-45-72-117-144-189-  
  216-261-288-333

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 10

## BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 14.70...14.90

Del.quantity cm3/ : 21.9...22.1

100H.: (21.6...22.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 6.6...6.8

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.6

100H.: (1.0)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 2.80...3.00

2nd speed 1/min: 600

Sleeve travel mm: 6.00...6.20

3rd speed 1/min: 900

Sleeve travel mm: 6.10...6.30

4th speed 1/min: 1000

Sleeve travel mm: 6.30...6.40

5th speed 1/min: 1150

Sleeve travel mm: 9.30...9.70

## SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 600  
Charge press. hPa : 900  
Del.quantity cm3/ : 219.0...221.0  
1000H.: (216.0...224.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 600  
Contr.-rod trav.mm: 20.0

Testing:  
1st c-rod trav.mm : 14.20  
Speed 1/min : 1095...1110  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1150...1180  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 6.7

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.30  
Speed 1/min : 300  
C-rod trav.mm : 6.60...6.80  
C-rod trav.mm : 2.00  
Speed 1/min : 380...420

#### TORQUE CONTROL

2nd speed 1/min : 1050  
C-rod trav.mm : 15.20...15.40  
3rd speed 1/min : 800  
C-rod trav.mm : 15.50...15.70

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 900  
Contr.-rod trav.mm: 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
C-rod trav.mm : 12.10...12.30  
2nd pressure hPa : 600

C-rod trav.mm : 13.60...13.80  
3rd pressure hPa : 960  
C-rod trav.mm : 14.80...14.90  
4th pressure hPa : 1100  
C-rod trav.mm : 15.20...15.40

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1300  
Speed 1/min : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000H.: (226.0...235.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1300  
Speed 1/min : 800  
Del.quantity cm3/ : 234.0...238.0  
1000H.: (231.0...241.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 133.0...135.0  
1000H.: (130.0...138.0)  
Dispersion cm3/ : 8.00  
1000H.: (-)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 14.20  
Speed 1/min : 1095...1110

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 230.0...250.0  
1000H.: (226.0...254.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 G 1  
Edition : 02.11.87  
Superceeded : 1.9.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 678 803  
  
Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RSV350...750POA825-3  
Governor no. : 0 421 833 260

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 240.0  
Speed 1/min: 1500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

# START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (4.15...5.35)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 8- 7- 2- 6- 3- 5-  
 4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-

270-315  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 15.10...15.20

Del.quantity cm3/ : 23.3...23.5

100H.: (23.0...23.8)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.2...5.4

Del.quantity cm3/ : 1.6...2.2  
 100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 233.0...235.0  
 1000H.: (230.0...238.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 24...32

Testing:

F23

1st c-rod trav.mm : 14.10

Speed 1/min : 750...755

2nd c-rod trav.mm : 4.00

Speed 1/min : 775...788

4th speed 1/min : 1400

C-rod trav.mm : 0.30...1.40

## LOWEST RATED SPEED I

Control-lever

position degrees: 10...18

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 5.3

## Testing:

Speed 1/min : 100

C-rod trav.mm min : 18.00

Speed 1/min : 350

C-rod trav.mm : 5.20...5.40

C-rod trav.mm : 2.00

Speed 1/min : 350...410

## SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

## TORQUE CONTROL

2nd speed 1/min : 900

C-rod trav.mm : 13.20...13.40

3rd speed 1/min : 1000

C-rod trav.mm : 12.40...12.60

## FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 600

Del.quantity cm3/ : 233.0...239.0

1000H.: (230.0...242.0)

Dispersion cm3/ : 8.00

1000H.: (12.0)

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 230.0...250.0

1000H.: (226.0...254.0)

Remarks:

:

## APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 6,1 N 8  
Edition : 02.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 403 446 166  
Injection pump  
Pump designation : PES6MW100/72ORS1133  
EP type number : 0 413 406 126  
Governor  
Governor design. : RQ325...1325MW65  
Governor no. : 0 420 082 018

Customer-spec. information  
Customer : KHD

Engine : BF 6L 913 BW

1st version kW : 124.0  
Speed 1/min: 2650

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1325

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 10.1...10.3

100H.: (9.9...10.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 325.0

Contr.-rod trav. m: 7.0...7.1

Del.quantity cm3/ : 1.1...1.5

100H.: (0.9...1.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 700

Contr.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1325

Charge press. hPa : 700

Del.quantity cm3/ : 101.0...103.0

1000H.: (99.0...105.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 26...34

Setting point:

Speed 1/min : 700

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1375...1385

2nd c-rod trav.mm : 4.00

Speed 1/min : 1445...1475

3rd c-rod trav.mm : 4.00

4th speed 1/min : 1550  
C-rod trav.mm : 0.10...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 8...16  
Setting point w/out aux. spring  
Speed 1/min : 325  
Contr.-rod trav.mm: 7.0

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.60  
Speed 1/min : 325  
C-rod trav.mm : 7.00...7.10

#### CONSTANT REGULATION

Speed 1/min : 340...450

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 11.00...11.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.50...9.60  
2nd pressure hPa : 350  
C-rod trav.mm : 10.10...10.40  
3rd pressure hPa : 450  
C-rod trav.mm : 10.70...10.80

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 700  
Speed 1/min : 850  
Del.quantity cm3/ : 93.0...97.0  
1000H.: (91.0...99.0)  
Dispersion cm3/ : 3.50  
1000H.: (7.00)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 57.0...59.0  
1000H.: (55.0...61.0)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 100

#### ROTATIONAL-SPEED LIMITATION

F25

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1375...1385

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 120.0...140.0  
1000H.: (117.0...143.0)

#### LOW IDLE

Speed 1/min : 325  
Contr.-rod trav.mm: 7.00...7.10  
Del.quantity cm3/ : 11.0...15.0  
1000H.: (9.0...17.0)  
Dispersion cm3/ : 3.50  
1000H.: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEN 6,1 P 3  
Edition : 06.11.87  
Superceeded : 12.85  
Calibrating oil : ISO-4113

Combination no. : 0 403 446 167

Injection pump  
Pump designation : PES6MW100/32ORS1136  
EP type number : 0 413 406 128  
Governor  
Governor design. : RQV350...1100MW54-2  
Governor no. : 0 420 083 096

Customer-spec. information  
Customer : VOLVO

Engine : TD 61

1st version kW : 111.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Contr.-rod trav.mm: 9.00...12.00



Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 12.40...12.50

Del.quantity cm3/ : 11.0...11.2

100H.: (10.8...11.4)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.3...6.4

Del.quantity cm3/ : 1.6...2.0

100H.: (1.4...2.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 700

Del.quantity cm3/ : 110.0...112.0

1000H.: (108.0...114.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 44...52

Testing:

1st c-rod trav.mm : 11.40

Speed 1/min : 1140...1150

2nd c-rod trav.mm : 4.00

Speed 1/min : 1200...1230

4th speed 1/min : 1350

C-rod trav.mm : 0.10...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 12...20

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 6.3

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.80

Speed 1/min : 350

C-rod trav.mm : 6.30...6.40

#### CONSTANT REGULATION

Speed 1/min : 370...450

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 480

Contr.-rod trav.mm: 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 10.90...11.00

2nd pressure hPa : 340

C-rod trav.mm : 11.10...11.40

3rd pressure hPa : 700

C-rod trav.mm : 12.40...12.50

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 700

Speed 1/min : 1000

Del.quantity cm3/ : 111.0...115.0

1000H.: (109.0...117.0)

Dispersion cm3/ : 3.50

1000H.: (7.00)

Charge press. hPa : -

Speed 1/min : 700

Del.quantity cm3/ : 82.0...84.0

1000H.: (80.0...86.0)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 100

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.40

Speed 1/min : 1140...1150

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...160.0

1000H.: (137.0...163.0)

Contr.-rod trav.mm: 19.00...21.00

LOW IDLE

Speed 1/min : 350

Contr.-rod trav.mm: 6.30...6.40

Del.quantity cm3/ : 16.0...20.0

1000H.: (14.0...22.0)

Dispersion cm3/ : 3.50

1000H.: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 D 26  
 Edition : 02.11.87  
 Superseded : 10.08.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 403 446 177  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW48  
 Governor no. : 0 420 083 066

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 125.0  
 Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1300

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 8.2...8.4

100H.: (8.0...8.6)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 7.8...7.9

Del.quantity cm3/ : 1.0...1.4

100H.: (0.9...1.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 1340

Sleeve travel mm: 8.50...8.70

2nd speed 1/min: 1450

Sleeve travel mm: 9.30...9.70

3rd speed 1/min: 500

Sleeve travel mm: 2.70...3.30

4th speed 1/min: 300

Sleeve travel mm: 1.20...1.70

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1350

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300

Del.quantity cm3/ : 82.5...84.5

1000H.: (80.5...86.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 50...58

#### Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1340...1350

2nd c-rod trav.mm : 4.00

Speed 1/min : 1425...1455

4th speed 1/min : 1550

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 18...26

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 7.8

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.70

Speed 1/min : 300

C-rod trav.mm : 7.80...7.90

#### CONSTANT REGULATION

Speed 1/min : 330...500

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1300

C-rod trav.mm : 11.00...11.10

2nd speed 1/min : 800

C-rod trav.mm : 11.80...12.00

3rd speed 1/min : 585

C-rod trav.mm : 12.00...12.20

4th speed 1/min : 1100

C-rod trav.mm : 11.00...11.10

#### SWITCH-OVER POINT

Speed 1/min : 230 (250)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 800

Del.quantity cm3/ : 82.0...84.0

1000H.: (80.0...86.0)

Dispersion cm3/ : 5.00

1000H.: (7.00)

Speed 1/min : 585

Del.quantity cm3/ : 77.5...80.5

1000H.: (75.0...83.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1340...1350

STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm<sup>3</sup>/ : 80.0...90.0  
1000H.: (77.0...93.0)

LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 7.80...7.90  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000H.: (9.0...15.0)  
Dispersion cm<sup>3</sup>/ : 3.50  
1000H.: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 D 27  
 Edition : 24.07.87  
 Superceeded : 13.05.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 403 446 179  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RQV300...1300MW74  
 Governer no. : 0 420 083 112

Customer-spec. information  
 Customer : MBB

Engine : OM 366 LA

1st version kW : 127.0  
 Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1300

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 7.6...7.8

100H.: (7.4...8.0)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 7.8...7.9

Del.quantity cm3/ : 1.0...1.4

100H.: (0.9...1.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 1340

Sleeve travel mm: 8.50...8.70

2nd speed 1/min: 1450

Sleeve travel mm: 9.50...9.70

3rd speed 1/min: 700

Sleeve travel mm: 3.90...4.50

4th speed 1/min: 300

Sleeve travel mm: 1.30...1.70

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1335

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300

Del.quantity cm3/ : 76.0...78.0

1000H.: (74.0...80.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

G05

Control-lever  
position degrees: 50...58

#### Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1340...1350

2nd c-rod trav.mm : 4.00

Speed 1/min : 1425...1455

4th speed 1/min : 1550

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 18...26

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 7.8

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 9.70

Speed 1/min : 300

C-rod trav.mm : 7.80...7.90

#### CONSTANT REGULATION

Speed 1/min : 330...600

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1300

C-rod trav.mm : 11.00...11.10

2nd speed 1/min : 750

C-rod trav.mm : 11.70...11.80

3rd speed 1/min : 1125

C-rod trav.mm : 11.40...11.50

#### SWITCH-OVER POINT

Speed 1/min : 230 (250)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 750

Del.quantity cm3/ : 68.0...70.0

1000H.: (65.0...73.0)

Dispersion cm3/ : 5.00

1000H.: (7.00)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1340...1350

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 80.0...90.0  
1000H.: (77.0...93.0)  
Contr.-rod trav.mm: 19.00...21.00

LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 7.80...7.90  
Del.quantity cm3/ : 10.0...14.0  
1000H.: (9.0...15.0)  
Dispersion cm3/ : 3.50  
1000H.: (5.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 8,8 K 6  
 Edition : 5.11.86  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 403 446 180  
 Injection pump  
 Pump designation : PES6MW100/32ORS1016  
 EP type number : 0 413 406 010  
 Governor  
 Governor design. : RQV300...1300MW25-6  
 Governor no. : 0 420 083 115

Customer-spec. information  
 Customer : RVI

Engine : MIDR-062-12-I

1st version kW : 130.0  
 Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 021

Inlet press., bar : 2.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Contr.-rod trav.mm: 9.0...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1300  
-----  
Contr.-rod trav.mm: 11.50...11.60  
-----  
Del.quantity cm3/ : 9.1...9.3  
100H.: (8.9...9.5)  
-----  
Dispersion cm3/ : 0.35  
100H.: (0.6)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 5.80...5.90  
Del.quantity cm3/ : 0.9...1.35  
100H.: (0.7...1.6)  
Dispersion cm3/ : 0.35  
100H.: (0.55)

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1300  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1300  
Charge press. hPa : 700  
Del.quantity cm3/ : 91.0...93.0  
1000H.: (89.5...95.0)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 10.50  
Speed 1/min : 1350...1370  
2nd c-rod trav.mm : 4.30  
Speed 1/min : 1480...1510  
4th speed 1/min : 1600  
C-rod trav.mm : 1.40...0.40

#### LOWEST RATED SPEED I

G08

Control-lever  
position degrees: 10...18  
Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 5.80...5.90  
Speed 1/min : 200  
C-rod trav.mm max : 3.70

#### CONSTANT REGULATION

Speed 1/min : 325...550  
Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 220  
Contr.-rod trav.mm: 9.90...10.00

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 700  
C-rod trav.mm : 11.50...11.60  
2nd pressure hPa : -  
C-rod trav.mm : 9.30...9.40  
3rd pressure hPa : 265  
C-rod trav.mm : 10.80...11.10

#### SWITCH-OVER POINT

Speed 1/min : 230 (250)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 700  
Speed 1/min : 900  
Del.quantity cm3/ : 88.0...92.0  
1000H.: (86.0...94.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 48.0...50.0  
1000H.: (46.0...52.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 10.50  
Speed 1/min : 1350...1370

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 100.0...110.0  
1000H.: (97.0...113.0)

LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 5.80...5.90  
Del.quantity cm3/ : 9.50...13.50  
1000H.: (7.00...16.00)  
Dispersion cm3/ : 3.50  
1000H.: (5.00)

Remarks:

:

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 7,6 R22  
 Edition : 02.11.87  
 Superceeded : 10.08.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 403 446 192  
 Injection pump  
 Pump designation : PES6MW100/32ORS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1300MW72-2  
 Governor no. : 0 420 083 141

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 136.0  
 Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Calibrating nozzle-holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0.5

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 900

Contr.-rod trav.mm: 10.00...10.10

Del.quantity cm3/ : 8.6...8.8

100H.: (8.4...9.0)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.4...6.5

Del.quantity cm3/ : 1.9...2.3

100H.: (1.6...2.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1350

Sleeve travel mm: 8.30...8.50

2nd speed 1/min: 1460

Sleeve travel mm: 9.10...9.50

3rd speed 1/min: 550

Sleeve travel mm: 3.10...3.70

4th speed 1/min: 350

Sleeve travel mm: 1.30...1.70

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1510

Cont.-rod travelmm: 6.60...9.40

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 900

Del.quantity cm3/ : 86.0...88.0

1000H.: (84.0...90.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 45...50

Testing:  
1st c-rod trav.mm : 9.00  
Speed 1/min : 1360...1380  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1460...1470  
4th speed 1/min : 1550  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 10...18  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 6.4

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 9.00  
Speed 1/min : 350  
C-rod trav.mm : 6.40...6.50

CONSTANT REGULATION  
Speed 1/min : 300...450

#### SWITCH-OVER POINT

Speed 1/min : 220 (280)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 1300  
Del.quantity cm3/ : 88.0...92.0  
1000H.: (86.0...94.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 9.00  
Speed 1/min : 1360...1380

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...180.0  
1000H.: (137.0...183.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 6.40...6.50  
Del.quantity cm3/ : 19.0...23.0  
1000H.: (16.5...25.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than  $n = 500$  1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 7,6 R21  
Edition : 02.11.87  
Superceeded : 31.07.87  
Calibrating oil : ISO-4113  
Combination no. : 0 403 446 195  
Injection pump  
Pump designation : PES6MW100/32ORS1112  
EP type number : 0 413 406 108  
Governor  
Governor design. : RQV350...1200MW46-13  
Governer no. : 0 420 083 144

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 180.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 12.30...12.40

Del.quantity cm3/ : 11.7...11.9

100H.: (11.5...12.1)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.3...6.4

Del.quantity cm3/ : 1.9...2.3

100H.: (1.6...2.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1350

Sleeve travel mm: 8.30...8.50

2nd speed 1/min: 1460

Sleeve travel mm: 9.10...9.50

3rd speed 1/min: 550

Sleeve travel mm: 3.10...3.70

4th speed 1/min: 350

Sleeve travel mm: 1.30...1.70

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1380

Cont.-rod travelmm: 6.70...9.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Charge press. hPa : 800

Del.quantity cm3/ : 117.5...119.5

1000H.: (115.5...121.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 43...48

Testing:  
1st c-rod trav.mm : 11.30  
Speed 1/min : 1265...1285  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1395...1405  
4th speed 1/min : 1500  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 12...20  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 6.3

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 9.00  
Speed 1/min : 350  
C-rod trav.mm : 6.30...6.40

## CONSTANT REGULATION

Speed 1/min : 360...450

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 190  
Contr.-rod trav.mm: 11.20...11.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 10.60...10.70  
2nd pressure hPa : 360  
C-rod trav.mm : 11.90...12.20  
3rd pressure hPa : 800  
C-rod trav.mm : 12.30...12.40

## SWITCH-OVER POINT

Speed 1/min : 280 (290)

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 800  
Speed 1/min : 1200

Del.quantity cm3/ : 120.0...124.0  
1000H.: (118.0...126.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 86.0...88.0  
1000H.: (84.0...90.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 11.30  
Speed 1/min : 1265...1285

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del,quantity cm3/ : 140.0...180.0  
1000H.: (137.0...183.0)  
Contr.-rod trav.mm: 19.00...21.00

## LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 6.30...6.40  
Del.quantity cm3/ : 19.0...23.0  
1000H.: (16.5...25.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 7,6 R24  
Edition : 02.11.87  
Superceeded : 10.08.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 403 446 197  
  
Injection pump  
Pump designation : PES6MW100/32ORS1112  
EP type number : 0 413 406 108  
Governor  
Governor design. : RQV350...1200MW46-15  
Governor no. : 0 420 083 146

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 158.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Calibrating nozzle-holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0.5

Test inj. tubing : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 9.9...10.1

100H.: (9.7...10.3)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.3...6.4

Del.quantity cm3/ : 1.9...2.3

100H.: (1.6...2.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1350

Sleeve travel mm: 8.30...8.50

2nd speed 1/min: 1460

Sleeve travel mm: 9.10...9.50

3rd speed 1/min: 550

Sleeve travel mm: 3.10...3.70

4th speed 1/min: 350

Sleeve travel mm: 1.30...1.70

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1380

Contr.-rod travelmm: 6.70...9.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Charge press. hPa : 800

Del.quantity cm3/ : 99.0...101.0

1000H.: (97.0...103.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 43...48

### Testing:

1st c-rod trav.mm : 10.00  
Speed 1/min : 1270...1290  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1380...1390  
4th speed 1/min : 1500  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 10...18  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 6.3

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 9.00  
Speed 1/min : 350  
C-rod trav.mm : 6.30...6.40

## CONSTANT REGULATION

Speed 1/min : 360...450

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 200  
Contr.-rod trav.mm: 10.70...10.80

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 10.40...10.50  
2nd pressure hPa : 280  
C-rod trav.mm : 10.80...11.10  
3rd pressure hPa : 800  
C-rod trav.mm : 11.00...11.10

## SWITCH-OVER POINT

Speed 1/min : 280 (290)

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : 800  
Speed 1/min : 1200

Del.quantity cm3/ : 101.0...105.0  
1000H.: (99.0...107.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 84.0...86.0  
1000H.: (82.0...88.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1270...1290

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...180.0  
1000H.: (137.0...183.0)  
Contr.-rod trav.mm: 19.00...21.00

## LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 6.30...6.40  
Del.quantity cm3/ : 19.0...23.0  
1000H.: (16.5...25.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than  $n = 500$  1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 13.4 E1  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 403 548 015  
Injection pump  
Pump designation : PE8MW100/720LS1149  
EP type number : 0 413 508 105  
Governor  
Governor design. : RQV450...1150MW70  
Governor no. : 0 420 083 103

Customer-spec. information  
Customer : KHD

Engine : F 8L 513

1st version kW : 155.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 8- 7- 2- 6- 5-  
4- 3

SD ang. spacing°CS: 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 10.30...10.40

Del.quantity cm3/ : 9.0...9.2

100H.: (8.8...9.4)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 450.0

Contr.-rod trav. m: 6.1...6.3

Del.quantity cm3/ : 1.3...1.7

100H.: (1.1...2.0)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1170

Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Del.quantity cm3/ : 90.0...92.0

1000H.: (88.0...94.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 52...60

Testing:

1st c-rod trav.mm : 9.30

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.50

Speed 1/min : 1240...1270

4th speed 1/min : 1350

C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 14...22  
Setting point w/out aux. spring  
Speed 1/min : 450  
Contr.-rod trav.mm: 6.2

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 450  
C-rod trav.mm : 6.10...6.30

CONSTANT REGULATION  
Speed 1/min : 470...570

TORQUE CONTROL  
Torque-control curve - 1st version  
1st speed 1/min : 1150  
C-rod trav.mm : 10.30...10.40  
2nd speed 1/min : 875  
C-rod trav.mm : 11.40...11.50  
3rd speed 1/min : 1050  
C-rod trav.mm : 10.50...10.80

#### SWITCH-OVER POINT

Speed 1/min : 370 (390)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 875  
Del.quantity cm3/ : 101.0...103.0  
1000H.: (99.0...105.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 9.30  
Speed 1/min : 1190...1200

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 130.0...140.0  
1000H.: (127.0...143.0)

#### LOW IDLE

Speed 1/min : 450  
Contr.-rod trav.mm: 6.10...6.30  
Del.quantity cm3/ : 13.0...17.0  
1000H.: (11.0...20.0)

Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 17,4 A  
Edition : 02.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 0 405 638 201

Injection pump  
Pump designation : PE8PM120A12ORS7119  
EP type number : 0 415 628 201  
Governor  
Governor design. : RQ350/1150PA791  
Governor no. : 0 421 801 340

Customer-spec. information  
Customer : PERKINS

Engine : MCY 80

1st version kW : 410.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 3- 6- 5- 4- 8-  
                  7- 2

SD ang. spacing<sup>o</sup>CS: 0-45-90-135-180-225-  
                  270-315

Tolerance + - <sup>o</sup> : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 13.60...13.70

Del.quantity cm3/ : 25.7...25.9

100H.: (25.4...26.2)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 4.0...4.2

Del.quantity cm3/ : 1.7...2.3

100H.: (1.4...2.6)

Dispersion cm3/ : 0.8

100H.: (1.2)

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 750

Contr.-rod travelmm: 14.70...16.30

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Charge press. hPa : 1200

Del.quantity cm3/ : 257.0...259.0

1000H.: (254.0...262.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 750

Contr.-rod trav.mm: 15.5

Testing:

1st c-rod trav.mm : 12.60

Speed 1/min : 1195...1210

2nd c-rod trav.mm : 4.00

Speed 1/min : 1285...1315

4th speed 1/min : 1400

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 350

Contr.-rod trav.mm: 4.1

Testing:

Speed 1/min : 100

C-rod trav.mm min : 5.50

Speed 1/min : 350

C-rod trav.mm : 4.00...4.20

C-rod trav.mm : 2.00

Speed 1/min : 390...430

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1200

Contr.-rod trav.mm: 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 10.60...10.80

2nd pressure hPa : 890

C-rod trav.mm : 12.90...13.00

3rd pressure hPa : 590

C-rod trav.mm : 11.30...11.50

#### SWITCH-OVER POINT

Speed 1/min : 300 (0)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 1200

Speed 1/min : 700

Del.quantity cm3/ : 265.0...271.0

1000H.: (262.0...274.0)

Charge press. hPa : -

Speed 1/min : 700

Del.quantity cm3/ : 192.0...196.0

1000H.: (190.0...198.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.60  
Speed 1/min : 1195...1210

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 195.0...215.0  
1000H.: (192.0...218.0)  
Contr.-rod trav.mm: 19.50...21.00

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,3 B 2  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 083 452  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2  
EP type number : 9 410 230 028  
Governor  
Governor design. : RQV350...1250AB1225R  
Governor no. : 9 420 080 224

Customer-spec. information  
Customer : CUMMINS

Engine : 6 C 8.3L

1st version kW : 123.0  
Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod trav max. : 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed 1/mi: 1250

Contr.-rod trav.mm: 11.20...11.30

Del.quantity cm3/ : 10.3...10.5

100H.: (10.1...10.7)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/ : 1.4...1.8

100H.: (1.1...2.0)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1200

Sleeve travel mm: 8.50...8.60

2nd speed 1/min: 900

Sleeve travel mm: 6.10...6.50

3rd speed 1/min: 500

Sleeve travel mm: 4.30...4.70

4th speed 1/min: 350

Sleeve travel mm: 2.20...3.00

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1300

Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1250

Del.quantity cm3/ : 103.5...105.5  
1000H.: (101.5...107.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 115...123

Testing:  
1st c-rod trav.mm : 10.20  
Speed 1/min : 1290...1300  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1390...1420  
4th speed 1/min : 1500  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 67...75

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 10.00  
Speed 1/min : 350  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 400...460

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Dimension a mm : ?  
Torque-control curve - 1st version  
1st speed 1/min : 1250  
C-rod trav.mm : 11.20...11.30  
2nd speed 1/min : 500  
C-rod trav.mm : 11.80...11.90  
3rd speed 1/min : 600  
C-rod trav.mm : 11.50...11.70  
4th speed 1/min : 750  
C-rod trav.mm : 11.30...11.60

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 500  
Del.quantity cm3/ : 101.0...104.0  
1000H.: (98.5...106.5)  
Speed 1/min : 600  
Del.quantity cm3/ : 103.5...106.5  
1000H.: (101.0...109.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.20  
Speed 1/min : 1290...1300

#### MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 168.0...182.0  
1000H.: (165.0...185.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.40...5.60  
Del.quantity cm3/ : 14.0...18.0  
1000H.: (11.5...20.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:  
Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1



## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min : 1300  
Charge press. hPa : 600  
Del.quantity cm3/ : 94.0...96.0  
1000H.: (91.5...98.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 111...119

Testing:

1st c-rod trav.mm : 11.80  
Speed 1/min : 1340...1350  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1480...1510  
4th speed 1/min : 1600  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 68...76

Testing:

Speed 1/min : 100  
C-rod trav.mm min : 10.00  
Speed 1/min : 350  
C-rod trav.mm : 7.40...7.60  
C-rod trav.mm : 2.00  
Speed 1/min : 700...760

## CONSTANT REGULATION

Speed 1/min : 370...440

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 10.80...10.90  
2nd pressure hPa : 300  
C-rod trav.mm : 11.10...11.30  
3rd pressure hPa : 400  
C-rod trav.mm : 12.30...12.40

## SWITCH-OVER POINT

Speed 1/min : 290 (310)

## FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 600  
Speed 1/min : 800  
Del.quantity cm3/ : 83.5...87.5  
1000H.: (81.5...89.5)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 58.5...60.5  
1000H.: (56.0...63.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.80  
Speed 1/min : 1340...1350

## MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 180.0...200.0  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 7.40...7.60  
Del.quantity cm3/ : 22.0...26.0  
1000H.: (19.5...28.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEZ 6,1 A  
Edition : 21.05.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 085 293  
Injection pump  
Pump designation : PES6A80D410RS2527  
EP type number : 9 400 093 005  
Governor  
Governor design. : RQV300...1400AB1234L  
Governor no. : 9 420 080 241

Customer-spec. information  
Customer : DEUTZ ARGENTINA

Engine : F 6 L 913

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1400  
-----  
Contr.-rod trav.mm: 12.00...12.10  
-----  
Del.quantity cm3/ : 6.9...7.0  
-----  
100H.: (6.7...7.1)  
-----  
Dispersion cm3/ : 0.2  
-----  
100H.: (0.4)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 8.4...8.6  
Del.quantity cm3/ : 0.8...1.1  
100H.: (0.7...1.3)  
Dispersion cm3/ : 0.2  
100H.: (0.3)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
Sleeve travel mm: 0.50...1.00  
2nd speed 1/min: 600  
Sleeve travel mm: 2.70...3.10  
3rd speed 1/min: 800  
Sleeve travel mm: 4.10...4.50  
4th speed 1/min: 1100  
Sleeve travel mm: 5.80...6.10  
5th speed 1/min: 1485  
Sleeve travel mm: 8.40...8.60

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1485  
Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1400  
Del.quantity cm3/ : 69.0...70.0  
1000H.: (67.5...71.5)  
Dispersion cm3/ : 2.50  
1000H.: (4.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 55...63

Testing:

1st c-rod trav.mm : 11.00  
Speed 1/min : 1440...1450  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1570...1600  
3rd c-rod trav.mm : 4.00  
4th speed 1/min : 1700  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I

Control-lever  
position degrees: 6...14

Testing:

Speed 1/min : 100  
C-rod trav.mm min : 7.50  
Speed 1/min : 300  
C-rod trav.mm : 5.90...6.10  
C-rod trav.mm : 2.00  
Speed 1/min : 540...600

CONSTANT REGULATION

Speed 1/min : 400...500

TORQUE CONTROL

Dimension a mm : ?  
Torque-control curve - 1st version  
1st speed 1/min : 1400  
C-rod trav.mm : 12.00...12.10  
2nd speed 1/min : 500  
C-rod trav.mm : 12.90...13.00  
3rd speed 1/min : 1000  
C-rod trav.mm : 12.70...12.90  
4th speed 1/min : 1200  
C-rod trav.mm : 12.20...12.50

SWITCH-OVER POINT

Speed 1/min : 220 (240)

FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 500  
Del.quantity cm3/ : 63.0...65.0  
1000H.: (61.0...67.0)  
Speed 1/min : 1000  
Del.quantity cm3/ : 67.0...69.0  
1000H.: (65.0...71.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.00  
Speed 1/min : 1440...1450

MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

STARTING FUEL DELIVERY

Speed 1/min : 100  
Contr.-rod trav.mm: 19.00...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 4,4 C  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 085 294

Injection pump  
Pump designation : PES4A95D410RS2752  
EP type number : 9 400 084 014  
Governor  
Governor design. : RS350/1300A2B2149-3L  
Governor no. : 9 420 083 235

Customer-spec. information  
Customer : FORD-FNH

Engine : 4,4 L

1st version kW : 85.0  
Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25  
                  : (3.10...3.30)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 3- 4- 2

SD ang. spacing<sup>o</sup>CS: 0-90-180-270  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference<sup>o</sup> CS : 4.00...5.00

#### BASIC SETTING

1st speed 1/mi: 1300  
-----  
Contr.-rod trav.mm: 13.00...13.10  
-----  
Del.quantity cm3/ : 9.6...9.8  
-----  
100H.: (9.4...10.1)  
-----  
Dispersion cm3/ : 0.3  
-----  
100H.: (0.6)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 5.9...6.1  
Del.quantity cm3/ : 1.2...1.6  
100H.: (1.0...1.9)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

#### SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.10

Governor-spring reload  
Notch setting x : 5.25

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1300  
Del.quantity cm3/ : 96.5...98.5  
1000H.: (94.0...101.0)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

H02

Control-lever  
position degrees: 55...63

#### Testing:

1st c-rod trav.mm : 12.00  
Speed 1/min : 1360...1370  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1465...1495  
4th speed 1/min : 1600  
C-rod trav.mm : 0.30...1.70

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 21...29  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 6.0

#### Testing:

Speed 1/min : 550  
C-rod trav.mm min : 2.70  
Speed 1/min : 350  
C-rod trav.mm : 5.90...6.10  
C-rod trav.mm : 2.00  
Speed 1/min : 1340...140  
Speed 1/min : 550  
C-rod trav.mm max : 3.50

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1300  
C-rod trav.mm : 13.00...13.10  
2nd speed 1/min : 500  
C-rod trav.mm : 13.00...13.20  
5th speed 1/min : 400  
C-rod trav.mm : 14.40...14.60

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 500  
Del.quantity cm3/ : 83.0...87.0  
1000H.: (81.0...89.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 12.00  
Speed 1/min : 1360...1370

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 150.0...170.0  
1000H.: (-)



Contr.-rod trav.mm: 20.00...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 5,7 N 14  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 085 296  
Injection pump  
Pump designation : PES6A90D41ORS2293  
EP type number : 0 410 896 031  
Governor  
Governor design. : RQV300...1425AB740-5  
L  
Governor no. : 9 420 080 249

Customer-spec. information  
Customer : DAIMLER-BENZ BRAS.

Engine : OM352

1st version kW : 92.0  
Speed 1/min: 2850

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 1400  
-----  
Contr.-rod trav.mm: 9.20...9.30  
-----  
Del.quantity cm3/ : 5.8...5.9  
100H.: (5.6...6.1)  
-----  
Dispersion cm3/ : 0.3  
100H.: (0.5)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 7.4...7.6  
Del.quantity cm3/ : 1.0...1.6  
100H.: (0.8...1.8)  
Dispersion cm3/ : 0.2  
100H.: (0.4)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 1460  
Sleeve travel mm: 8.40...8.60  
2nd speed 1/min: 950  
Sleeve travel mm: 5.20...5.50  
3rd speed 1/min: 775  
Sleeve travel mm: 4.10...4.60  
4th speed 1/min: 550  
Sleeve travel mm: 2.70...3.00  
5th speed 1/min: 300  
Sleeve travel mm: 0.70...1.20

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1460  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1400  
Del.quantity cm3/ : 58.5...59.5  
1000H.: (56.5...61.5)  
Dispersion cm3/ : 3.00  
1000H.: (5.00)

#### HIGHEST RATED SPEED

H05

1st version  
Control-lever  
position degrees: 114...122

Testing:  
1st c-rod trav.mm : 8.20  
Speed 1/min : 1460...1470  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1540...1570  
4th speed 1/min : 1700  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 64...72

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 9.00  
Speed 1/min : 300  
C-rod trav.mm : 7.40...7.60  
C-rod trav.mm : 2.00  
Speed 1/min : 680...740

CONSTANT REGULATION  
Speed 1/min : 320...550

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1400  
C-rod trav.mm : 9.20...9.30  
2nd speed 1/min : 500  
C-rod trav.mm : 10.10...10.20  
3rd speed 1/min : 800  
C-rod trav.mm : 9.80...10.00  
4th speed 1/min : 1000  
C-rod trav.mm : 9.40...9.70

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 500  
Del.quantity cm3/ : 49.0...51.0  
1000H.: (46.5...53.5)  
Speed 1/min : 800  
Del.quantity cm3/ : 55.0...57.0  
1000H.: (52.5...59.5)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.20

Speed 1/min : 1460...1470

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 71.0...81.0

1000H.: (68.0...84.0)

Contr.-rod trav.mm: 13.90...14.30

Remarks:

APPLICATION :

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 10,0011  
 Edition : 24.07.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 295  
 Injection pump  
 Pump designation : PE6P110A32ORS3108Y  
 EP type number : 0 411 816 729  
 Governor  
 Governor design. : RQV250...1100PA589-1  
 Governor no. : 9 420 080 166

Customer-spec. information  
 Customer : VOLVO

Engine : THD 100 EC

1st version kW : 180.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Contr.-rod trav.mm: 9.00...12.00

H07

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 13.8...14.0

100H.: (13.5...14.3)

Dispersion cm3/ : 0.4

100H.: (0.75)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.0...5.2

Del.quantity cm3/ : 3.2...3.6

100H.: (2.9...3.8)

Dispersion cm3/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 500

Sleeve travel mm: 4.10...4.90

3rd speed 1/min: 700

Sleeve travel mm: 6.30...6.70

4th speed 1/min: 950

Sleeve travel mm: 6.30...6.70

5th speed 1/min: 1100

Sleeve travel mm: 7.00...7.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1175

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 900

Del.quantity cm3/ : 138.0...140.0

1000H.: (135.0...143.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 55...63

### Testing:

1st c-rod trav.mm : 10.10  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1205...1235  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 8...16

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.70  
Speed 1/min : 250  
C-rod trav.mm : 5.00...5.20  
C-rod trav.mm : 2.00  
Speed 1/min : 345...405

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 11.10...11.20

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.60...9.80  
2nd pressure hPa : 300  
C-rod trav.mm : 9.90...10.00  
3rd pressure hPa : 420  
C-rod trav.mm : 10.70...10.90

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 105.5...108.5  
1000H.: (103.0...111.0)

## ROTATIONAL-SPEED LIMITATION

### 1st version

H08

1mm control-rod travel less than

full-load trav.mm: 10.10  
Speed 1/min : 1140...1150

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 170.0...200.0  
1000H.: (166.0...204.0)  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 5.00...5.20  
Del.quantity cm3/ : 32.0...36.0  
1000H.: (29.5...38.5)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

## APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 10,5 J  
 Edition : 06.11.87  
 Superceeded : 24.7.87  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 348  
 Injection pump  
 Pump designation : PES6P100A720LS508  
 EP type number : 9 400 087 053  
 Governor  
 Governor design. : RQV350...875PA798-6  
 Governer no. : 9 420 080 236

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DINA

1st version kW : 87.2  
 Speed 1/min: 1950

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
 : (3.90...4.10)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 875

Contr.-rod trav.mm: 8.80...8.90

Del.quantity cm3/ : 7.1...7.3

100H.: (6.9...7.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.7...6.9

Del.quantity cm3/ : 1.0...1.4

100H.: (0.7...1.6)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 350

Sleeve travel mm: 1.40...3.00

2nd speed 1/min: 450

Sleeve travel mm: 3.10...3.50

3rd speed 1/min: 650

Sleeve travel mm: 5.60...6.00

4th speed 1/min: 920

Sleeve travel mm: 8.50...8.60

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 950

Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 875

Del.quantity cm3/ : 71.5...73.5

1000H.: (69.5...75.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

### Testing:

1st c-rod trav.mm : 7.80  
Speed 1/min : 910...920  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 950...900  
4th speed 1/min : 1050  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 11...19

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 350  
C-rod trav.mm : 5.10...5.30  
C-rod trav.mm : 2.00  
Speed 1/min : 440...500

## CONSTANT REGULATION

Speed 1/min : 350...420

## TORQUE CONTROL

Dimension a mm : ?  
Torque-control curve - 1st version  
1st speed 1/min : 875  
C-rod trav.mm : 8.80...8.90  
2nd speed 1/min : 600  
C-rod trav.mm : 9.50...8.60  
3rd speed 1/min : 700  
C-rod trav.mm : 9.20...9.40  
4th speed 1/min : 750  
C-rod trav.mm : 9.00...9.30

## SWITCH-OVER POINT

Speed 1/min : 290 (310)

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Speed 1/min : 600  
Del.quantity cm3/ : 70.0...74.0  
1000H.: (68.0...76.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.)  
Speed 1/min : 750  
Del.quantity cm3/ : 70.5...74.5  
1000H.: (68.5...76.5)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 7.80  
Speed 1/min : 910...920

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 165.0...185.0  
1000H.: (161.0...189.0)  
Contr.-rod trav.mm: 19.00...21.00

## LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.10...5.30

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 6,6 D  
Edition : 21.05.87  
Superceeded : 15.12.86  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 353

Injection pump  
Pump designation : PES6P110A720RS3157  
EP type number : 9 400 087 048  
Governor  
Governor design. : RQV350...1300PA788  
Governor no. : 9 420 080 215

Customer-spec. information  
Customer : FORD NEW HOLLAND

Engine : 6.6l-TC

1st version kW : 127.0  
Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1300  
-----  
Contr.-rod trav.mm: 13.20...13.30  
-----  
Del.quantity cm3/ : 12.8...13.0  
-----  
100H.: (12.6...13.2)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 7.9...8.1  
Del.quantity cm3/ : 1.9...2.3  
100H.: (1.6...2.5)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 1300  
Sleeve travel mm: 7.20...7.30  
2nd speed 1/min: 1000  
Sleeve travel mm: 5.00...5.30  
3rd speed 1/min: 800  
Sleeve travel mm: 4.00...4.30  
4th speed 1/min: 500  
Sleeve travel mm: 2.30...2.70  
5th speed 1/min: 350  
Sleeve travel mm: 0.60...1.30

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1350  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1300  
Charge press. hPa : 900

Del.quantity cm3/ : 128.0...130.0  
1000H.: (126.0...132.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 60...68

Testing:  
1st c-rod trav.mm : 12.20  
Speed 1/min : 1360...1370  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1500...1530  
4th speed 1/min : 1620  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 11...19

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 9.50  
Speed 1/min : 350  
C-rod trav.mm : 7.90...8.10  
C-rod trav.mm : 2.00  
Speed 1/min : 620...680

#### CONSTANT REGULATION

Speed 1/min : 370...440

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 11.40...11.50  
2nd pressure hPa : 650  
C-rod trav.mm : 12.60...12.80  
3rd pressure hPa : 530  
C-rod trav.mm : 12.00...12.10

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 900  
Speed 1/min : 800  
Del.quantity cm3/ : 102.5...106.5  
1000H.: (100.5...108.5)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 60.0...62.0  
1000H.: (57.0...65.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.20  
Speed 1/min : 1360...1370

MIDDLE RATED SPEED  
Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 100.0...120.0  
1000H.: (96.0...124.0)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 7.90...8.10  
Del.quantity cm3/ : 19.0...23.0  
1000H.: (16.5...25.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

#### Remarks:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 10,5 I  
 Edition : 06.11.87  
 Superceeded : 24.7.87  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 356  
 Injection pump  
 Pump designation : PES6P100A720LS511  
 EP type number : 9 400 087 059  
 Governor  
 Governor design. : RQV350/840...900PA  
 839  
 Governor no. : 9 420 080 233

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DIT

1st version kW : 207.0  
 Speed 1/min: 1800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 900  
 -----  
 Contr.-rod trav.mm: 12.60...12.70  
 -----  
 Del.quantity cm3/ : 18.2...18.4  
 -----  
 100H.: (18.0...18.7)  
 -----  
 Dispersion cm3/ : 0.3  
 -----  
 100H.: (0.6)  
 -----

2nd speed 1/min: 350.0  
 Contr.-rod trav. m: 6.4...6.6  
 Del.quantity cm3/ : 1.3...1.7  
 100H.: (1.0...1.9)  
 Dispersion cm3/ : 0.3  
 100H.: (0.5)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 350  
 Sleeve travel mm: 0.50...1.50  
 2nd speed 1/min: 500  
 Sleeve travel mm: 2.40...2.60  
 3rd speed 1/min: 750  
 Sleeve travel mm: 2.40...2.60  
 4th speed 1/min: 850  
 Sleeve travel mm: 4.00...4.50  
 5th speed 1/min: 950  
 Sleeve travel mm: 8.50...8.60

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 925  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 900

Del.quantity cm3/ : 182.5...184.5  
1000H.: (180.0...187.0)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

Generator

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 57...65

Testing:  
1st c-rod trav.mm : 11.60  
Speed 1/min : 910...920  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 930...960  
4th speed 1/min : 1050  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 5...13

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.00  
Speed 1/min : 350  
C-rod trav.mm : 4.70...4.90  
C-rod trav.mm : 2.00  
Speed 1/min : 770...830

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 11.60  
Speed 1/min : 910...920

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 195.0...215.0  
1000H.: (191.0...219.0)  
Contr.-rod trav.mm: 14.00...15.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 4.70...4.90

Remarks:

APPLICATION

H15

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 7.0 F  
Edition : 24.07.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 087 358  
Injection pump  
Pump designation : PES4P100A720LS510  
EP type number : 9 400 087 058  
Governor  
Governor design. : RQV350/840...900PA  
839  
Governor no. : 9 420 080 233

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 149.0  
Speed 1/min: 1800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 2...3

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 3- 4- 2

SD ang. spacing°CS: 0-90-180-270  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 900  
-----  
Contr.-rod trav.mm: 13.70...13.80  
-----  
Del.quantity cm3/ : 20.3...20.5  
-----  
100H.: (20.0...20.7)  
-----  
Dispersion cm3/ : 0.3  
-----  
100H.: (0.6)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 6.4...6.6  
Del.quantity cm3/ : 1.3...1.7  
100H.: (1.0...1.9)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 950  
Sleeve travel mm: 8.50...8.60  
2nd speed 1/min: 350  
Sleeve travel mm: 0.50...1.50  
3rd speed 1/min: 500  
Sleeve travel mm: 2.40...2.60  
4th speed 1/min: 750  
Sleeve travel mm: 2.40...2.60  
5th speed 1/min: 850  
Sleeve travel mm: 4.00...4.50

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 925  
Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 900

Del.quantity cm3/ : 203.0...205.0  
1000H.: (200.5...207.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

Generator

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 58...66

Testing:  
1st c-rod trav.mm : 12.70  
Speed 1/min : 910...920  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 940...970  
4th speed 1/min : 1050  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 5...13

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.00  
Speed 1/min : 350  
C-rod trav.mm : 4.70...4.90  
C-rod trav.mm : 2.00  
Speed 1/min : 770...830

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 12.70  
Speed 1/min : 910...920

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 195.0...215.0  
1000H.: (191.0...219.0)  
Contr.-rod trav.mm: 14.00...15.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 4.70...4.90

Remarks:

APPLICATION

H17

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 7,0 E  
Edition : 5.11.87  
Superceeded : 17.11.86  
Calibrating oil : ISO-4113  
Combination no. : 9 400 087 362  
Injection pump  
Pump designation : PES4P100A720LS501  
EP type number : 9 400 087 051  
Governor  
Governor design. : RQV350...1100PA828  
Governor no. : 9 420 080 232

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 81.3  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.0

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00X2,00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 1.50...2.50

Prestroke mm : 3.95...4.05  
: (3.90...4.10)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1-3-4-2

SD ang. spacing°CS: 0-90-180-270  
Tolerance + - ° : 0.5(0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 10.80...10.90

Del.quantity cm3/ : 13.0...13.2

100H.: (12.8...13.4)

Dispersion cm3/ : 0.35

100H.: (0.6)

2nd speed 1/min: 350

Contr.-rod trav. m: 6.40...6.60

Del.quantity cm3/ : 1.5...1.9

100H.: (1.2...2.1)

Dispersion cm3/ : 0.35

100H.: (0.55)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 350

Sleeve travel mm: 1.30...1.50

2nd speed 1/min: 500

Sleeve travel mm: 2.90...3.20

3rd speed 1/min: 700

Sleeve travel mm: 4.50...4.80

4th speed 1/min: 900

Sleeve travel mm: 6.00...6.20

5th speed 1/min: 1150

Sleeve travel mm: 8.50...8.60

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1150

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Charge press. hPa : 600



Del.quantity cm3/ : 130.0...132.0  
1000H.: (128.0...134.0)  
Dispersion cm3/ : 3.5  
1000H.: (6.0)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 9.80  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1210...1240  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...17

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 350  
C-rod trav.mm : 5.10...5.30  
C-rod trav.mm : 2.00  
Speed 1/min : 530...590

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 10.80...10.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.80...9.00  
2nd pressure hPa : 310  
C-rod trav.mm : 10.40...10.50  
3rd pressure hPa : 210  
C-rod trav.mm : 9.30...9.50

#### SWITCH-OVER POINT

Speed 1/min : 270(310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 600

H19

Speed 1/min : 700  
Del.quantity cm3/ : 123.0...127.0  
1000H.: (121.0...129.0)  
Dispersion cm3/ : 5.0  
1000H.: (7.0)  
Charge press. hPa : -  
Speed 1/min : 1100  
Del.quantity cm3/ : 90.0...92.0  
1000H.: (88.0...94.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 9.80  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 157.0...177.0  
1000H.: (153.0...181.0)  
Contr.-rod trav.mm: 19.0...21.0

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.10...5.30

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 10,5 G2  
 Edition : 12.11.87  
 Superseded : 3.12.86  
 Calibrating oil : ISO-4113  
  
 Combination no. : 9 400 087 363  
  
 Injection pump  
 Pump designation : PES6P100A72OLS502  
 EP type number : 9 400 087 050  
 Governor  
 Governor design. : RQV350...1100PA828  
 Governor no. : 9 420 080 232

Customer-spec. information  
 Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 173.7  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
                  : (3.90...4.10)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1100  
-----  
Contr.-rod trav.mm: 12.40...12.50  
-----  
Del.quantity cm3/ : 14.7...14.9  
-----  
                  100H.: (14.4...15.1)  
-----  
Dispersion cm3/ : 0.3  
-----  
                  100H.: (0.6)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 6.4...6.6  
Del.quantity cm3/ : 1.3...1.7  
                  100H.: (1.0...1.9)  
Dispersion cm3/ : 0.3  
                  100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.30...1.50  
2nd speed 1/min: 500  
Sleeve travel mm: 2.90...3.20  
3rd speed 1/min: 700  
Sleeve travel mm: 4.50...4.80  
4th speed 1/min: 900  
Sleeve travel mm: 6.00...6.20  
5th speed 1/min: 1150  
Sleeve travel mm: 8.50...8.60

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1150  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1100  
Charge press. hPa : 500

Del.quantity cm3/ : 147.0...149.0  
                  1000H.: (144.5...151.5)  
Dispersion cm3/ : 3.50  
                  1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 63...71

#### Testing:

1st c-rod trav.mm : 11.40  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1240...1270  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...17

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 350  
C-rod trav.mm : 5.10...5.30  
C-rod trav.mm : 2.00  
Speed 1/min : 530...590

#### CONSTANT REGULATION

Speed 1/min : 370...440

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

##### Setting

Speed 1/min : 500  
Pressure hPa : 500  
Contr.-rod trav.mm: 12.40...12.50

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.90...10.00  
2nd pressure hPa : 300  
C-rod trav.mm : 11.70...11.80  
3rd pressure hPa : 200  
C-rod trav.mm : 10.70...10.90

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 500  
Speed 1/min : 700  
Del.quantity cm3/ : 149.0...153.0  
1000H.: (147.0...155.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Charge press. hPa : -  
Speed 1/min : 1100  
Del.quantity cm3/ : 108.0...110.0  
1000H.: (105.5...112.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 11.40  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 157.0...177.0  
1000H.: (153.0...181.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.00...5.20

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAT 10,5 G3  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 364

Injection pump  
Pump designation : PES6P100A720LS502  
EP type number : 9 400 087 050  
Governor  
Governor design. : RQV350...1100PA828-1  
Governor no. : 9 420 080 235

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3306 DITA

1st version kW : 191.6  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 348

Inlet press., bar : 2.00

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,7

Test inj. tubing : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 2...3

Prestroke mm : 3.95...4.05  
                  : (3.90...4.10)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1100  
-----  
Contr.-rod trav.mm: 12.90...13.00  
-----  
Del.quantity cm3/ : 15.3...15.5  
-----  
                  100H.: (15.1...15.7)  
-----  
Dispersion cm3/ : 0.35  
-----  
                  100H.: (0.6)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 6.4...6.6  
Del.quantity cm3/ : 1.3...1.7  
                  100H.: (1.0...1.9)  
Dispersion cm3/ : 0.3  
                  100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.30...1.50  
2nd speed 1/min: 500  
Sleeve travel mm: 2.90...3.20  
3rd speed 1/min: 700  
Sleeve travel mm: 4.60...4.80  
4th speed 1/min: 900  
Sleeve travel mm: 6.00...6.20  
5th speed 1/min: 1150  
Sleeve travel mm: 8.50...8.60

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1150  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
3speed 1/min: 1100  
Charge press. hPa : 600

Del.quantity cm3/ : 153.0...155.0  
                  1000H.: (151.0...157.0)  
Dispersion cm3/ : 3.50  
                  1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 62...70

Testing:  
1st c-rod trav.mm : 11.90  
Speed 1/min : 1140...1150  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1250...1280  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...17

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 350  
C-rod trav.mm : 4.90...5.10  
C-rod trav.mm : 2.00  
Speed 1/min : 500...560

#### CONSTANT REGULATION

Speed 1/min : 370...440

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 12.90...13.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.90...10.00  
2nd pressure hPa : 340  
C-rod trav.mm : 12.00...12.10  
3rd pressure hPa : 200  
C-rod trav.mm : 10.60...10.80

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 600  
Speed 1/min : 700  
Del.quantity cm3/ : 159.0...163.0  
1000H.: (157.0...165.0)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)  
Speed 1/min : 1100  
Del.quantity cm3/ : 108.0...110.0  
1000H.: (105.5...112.5)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 11.90  
Speed 1/min : 1140...1150

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 157.0...177.0  
1000H.: (153.0...181.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.00...5.20

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 10,0 Q9  
 Edition : 24.07.87  
 Superseded : 21.5.87  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 368  
 Injection pump  
 Pump designation : PE6P110A32ORS3108V  
 EP type number : 0 411 816 37  
 Governor  
 Governor design. : RQV250...1100PA589-1  
 Governor no. : 9 420 080 166

Customer-spec. information  
 Customer : VOLVO

Engine : THD 101 FD

1st version kW : 210.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Contr.-rod trav.mm: 9.00...12.00



Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0- 60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 13.70...13.80

Del.quantity cm3/ : 18.0...18.2

100H.: (17.7...18.5)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 3.0...3.6

100H.: (2.7...3.6)

Dispersion cm3/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 500

Sleeve travel mm: 4.10...4.90

3rd speed 1/min: 700

Sleeve travel mm: 6.30...6.70

4th speed 1/min: 950

Sleeve travel mm: 6.30...6.70

5th speed 1/min: 1100

Sleeve travel mm: 7.00...7.50

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1175

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 1200

Del.quantity cm3/ : 180.0...182.0

1000H.: (177.0...185.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

H27

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 61...69

Testing:

1st c-rod trav.mm : 12.70

Speed 1/min : 1160...1170

2nd c-rod trav.mm : 4.00

Speed 1/min : 1240...1270

4th speed 1/min : 1350

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever

position degrees: 7...15

Testing:

Speed 1/min : 140

C-rod trav.mm min : 6.80

Speed 1/min : 250

C-rod trav.mm : 5.30...5.50

C-rod trav.mm : 2.00

Speed 1/min : 345...405

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : 1200

Contr.-rod trav.mm: 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.60...9.80

2nd pressure hPa : 300

C-rod trav.mm : 10.00...10.10

3rd pressure hPa : 870

C-rod trav.mm : 12.30...13.50

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : -

Speed 1/min : 700

Del.quantity cm3/ : 106.0...108.0

1000H.: (103.0...111.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.70

Speed 1/min : 1160...1170

#### MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 160.0...190.0

Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 5.30...5.50

Del.quantity cm3/ : 30.0...34.0

1000H.: (27.5...36.5)

Dispersion cm3/ : 3.00

1000H.: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 10,0Q10  
Edition : 12.11.87  
Superceeded : 21.5.87  
Calibrating oil : ISO-4113  
  
Combination no. : 9 400 087 369  
  
Injection pump  
Pump designation : PE6P110A32ORS3108Z  
EP type number : 0 411 816 728  
Governor  
Governor design. : RQV250...1100PA589-1  
Governor no. : 9 420 080 166

Customer-spec. information  
Customer : VOLVO

Engine : THD 101 GB

1st version kW : 160.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Contr.-rod trav.mm: 9.00...12.00

J01

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 10.50...10.60

Del.quantity cm3/ : 12.2...12.4

100H.: (11.9...12.7)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 3.0...3.4

Dispersion cm3/ : 0.3

100H.: (0.6)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 1.10...1.30

2nd speed 1/min: 500

Sleeve travel mm: 4.10...4.90

3rd speed 1/min: 700

Sleeve travel mm: 6.30...6.70

4th speed 1/min: 950

Sleeve travel mm: 6.30...6.70

5th speed 1/min: 1100

Sleeve travel mm: 7.00...7.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1175

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Charge press. hPa : 750

Del.quantity cm3/ : 122.0...124.0

1000H.: (119.0...127.0)

Dispersion cm3/ : 4.00

1000H.: (7.50)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

### Testing:

1st c-rod trav.mm : 9.50  
Speed 1/min : 1160...1170  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1225...1255  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 7...15  
Contr.-rod trav.mm: 5.4

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.80  
Speed 1/min : 250  
C-rod trav.mm : 5.30...5.50  
C-rod trav.mm : 2.00  
Speed 1/min : 350...410

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

### 1st version

#### Setting

Speed 1/min : 500  
Pressure hPa : 750  
Contr.-rod trav.mm: 10.50...10.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.60...9.80  
2nd pressure hPa : 265  
C-rod trav.mm : 9.90...10.00  
3rd pressure hPa : 311  
C-rod trav.mm : 10.20...10.40

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : -  
Speed 1/min : 700  
Del. quantity cm3/ : 105.5...108.5  
1000H.: (103.0...111.0)

## ROTATIONAL-SPEED LIMITATION

### 1st version

J02

1mm control-rod travel less than

full-load trav.mm: 9.50  
Speed 1/min : 1160...1170

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del. quantity cm3/ : 160.0...190.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 5.30...5.50  
Del. quantity cm3/ : 30.0...34.0  
1000H.: (-)  
Dispersion cm3/ : 3.00  
1000H.: (6.00)

Remarks:

:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

## APPLICATION

Omnibus

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet	: FOR 6,6 I
Edition	: 12.11.87
Superseded	: -
Calibrating oil	: ISO-4113
Combination no.	: 9 400 087 375
Injection pump	
Pump designation	: PES6P110A720RS3194
EP type number	: 9 400 087 055
Governor	
Governor design.	: RQV350...1300PA863-5
Governer no.	: 9 420 080 240

Customer-spec. information  
Customer : FORD FNH

Engine : 6.6 LTC

1st version kW : 126.0  
Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values

### START OF DELIVERY

Test pressure, bar: 25...27

```
Prestroke mm      : 4.05...4.15
                  : (4.00...4.20)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 1- 5- 3- 6- 2- 4
```

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup>: 0.50 (0.75)

SD mark cyl. no. : 1

## START OF DELIVERY DIFFERENCE

```

betw.c-rod trav.mm: 9.00...12.00
& c-rod trav max.  : 21.00
Difference ° CS     : 2.00...3.00

```

## BASIC SETTING

```
1st speed      1/mi: 1300
-----
Contr.-rod trav.mm: 14.60...14.70
```

Del.quantity cm3/ : 11.7...11.9  
100H.: (11.5...12.1)

Dispersion cm<sup>3</sup>/ : 0.5  
100H.: (0.9)

```

2nd speed      1/min: 350.0
Contr.-rod trav. m: 8.6...8.8
Del.quantity   cm3/ : 2.0...2.4
                100H.: (1.7...2.6)
Dispersion     cm3/ : 0.3
                100H.: (0.5)

```

(B) Setting of injection pump with externally-mounted governor

## SLEEVE TRAVELS

1st speed	1/min:	1400
Sleeve travel	mm:	8.60...8.70
2nd speed	1/min:	1000
Sleeve travel	mm:	5.70...6.10
3rd speed	1/min:	800
Sleeve travel	mm:	4.80...5.20
4th speed	1/min:	500
Sleeve travel	mm:	3.10...3.50
5th speed	1/min:	350
Sleeve travel	mm:	1.60...2.30

## SLEEVE POSITION

```
Control-lever position
Degree: -1
Speed      1/min: 1540
Cont.-rod travelmm: 8.00...0.00
```

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300  
Charge press. hPa : 800  
Del.quantity cm3/ : 117.0...119.0  
1000H.: (115.0...121.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 44...52

Testing:

1st c-rod trav.mm : 13.60  
Speed 1/min : 1360...1370  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1520...1550  
4th speed 1/min : 1650  
C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21

Testing:

Speed 1/min : 100  
C-rod trav.mm min : 12.00  
Speed 1/min : 350  
C-rod trav.mm : 8.60...8.80  
C-rod trav.mm : 2.00  
Speed 1/min : 535...595

## CONSTANT REGULATION

Speed 1/min : 430...500

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

1st version

Setting

Speed 1/min : 500  
Pressure hPa : 800  
Contr.-rod trav.mm: 14.60...14.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 12.60...12.70  
2nd pressure hPa : 580  
C-rod trav.mm : 13.40...13.60  
3rd pressure hPa : 620  
C-rod trav.mm : 14.00...14.10

## SWITCH-OVER POINT

J04

Speed 1/min : 290 (310)

## FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 800  
Speed 1/min : 900  
Del.quantity cm3/ : 100.5...104.5  
1000H.: (98.5...106.5)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 57.0...59.0  
1000H.: (55.0...61.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 13.60  
Speed 1/min : 1360...1370

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 120.0...140.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.60...8.80  
Del.quantity cm3/ : 20.0...24.0  
1000H.: (17.5...26.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 C  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 376

Injection pump  
Pump designation : PES6P110A720RS3193  
EP type number : 9 400 087 057  
Governor  
Governor design. : RSV650...1250P8A528  
Governor no. : 9 420 082 323

Customer-spec. information  
Customer : FORD FNH

Engine : 7.8 L

1st version kW : 140.0  
Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 9 401 087 214

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.30)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 13.20...13.30  
-----  
Del.quantity cm3/ : 13.2...13.4  
-----  
100H.: (13.0...13.6)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 650.0  
Contr.-rod trav. m: 5.9...6.1  
Del.quantity cm3/ : 0.8...1.2  
100H.: (0.5...1.5)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

#### SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...1.00

Governor-spring reload  
Notch setting x : 3.25

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1200  
Del.quantity cm3/ : 132.0...134.0  
1000H.: (130.0...136.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 49...57

Testing:  
1st c-rod trav.mm : 12.20  
Speed 1/min : 1260...1270

2nd c-rod trav.mm : 4.00  
Speed 1/min : 1300...1320  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.70

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 23...31  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 6.0

#### Testing:

Speed 1/min : 600  
C-rod trav.mm min : 10.00  
Speed 1/min : 650  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 770...830

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 800  
Del.quantity cm3/ : 110.0...114.0  
1000H.: (108.0...116.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 12.20  
Speed 1/min : 1260...1270

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 135.0...155.0  
1000H.: (131.0...159.0)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 650  
Contr.-rod trav.mm: 5.90...6.10  
Del.quantity cm3/ : 8.0...12.0  
1000H.: (5.5...15.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 C 1  
 Edition : 12.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 377  
 Injection pump  
 Pump designation : PES6P110A72ORS3193  
 EP type number : 9 400 087 057  
 Governor  
 Governor design. : RSV650...1250P8A530-  
 1  
 Governor no. : 9 420 082 324

Customer-spec. information  
 Customer : FORD - FNH

Engine : 7.8 l

1st version kW : 165.0  
 Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

J08

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
 & c-rod tray max. : 21.00  
 Difference<sup>0</sup> CS : 2.00...3.00

## BASIC SETTING

1st speed 1/mi: 1200

Contr.-rod trav.mm: 14.00...14.10

Del.quantity cm3/ : 13.7...13.9

100H.: (13.5...14.1)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 650.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm3/ : 1.1...1.5

100H.: (0.8...1.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...1.00

Governor-spring reload

Notch setting x : 3.25

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Charge press. hPa : 1000

Del.quantity cm3/ : 137.0...139.0

1000H.: (135.0...141.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 49...57

Testing:  
1st c-rod trav.mm : 13.00  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1305...1325  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.70

LOWEST RATED SPEED I  
Control-lever  
position degrees: 23...31  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 5.5

Testing:  
Speed 1/min : 600  
C-rod trav.mm min : 10.00  
Speed 1/min : 650  
C-rod trav.mm : 5.90...6.10  
C-rod trav.mm : 2.00  
Speed 1/min : 770...830

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 14.00...14.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 10.40...10.50  
2nd pressure hPa : 600  
C-rod trav.mm : 13.40...13.50  
3rd pressure hPa : 350  
C-rod trav.mm : 11.60...11.80

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1000  
Speed 1/min : 800  
Del.quantity cm3/ : 117.5...119.5  
1000H.: (115.5...121.5)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 52.0...54.0  
1000H.: (50.0...56.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 13.00  
Speed 1/min : 1260...1270

MIDDLE RATED SPEED  
Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 135.0...155.0  
1000H.: (131.0...159.0)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 650  
Contr.-rod trav.mm: 5.90...6.10  
Del.quantity cm3/ : 11.0...15.0  
1000H.: (8.5...17.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 C 2  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 378

Injection pump  
Pump designation : PES6P110A720RS3193  
EP type number : 9 400 087 057  
Governor  
Governor design. : RSV650...1250P8A530  
Governor no. : 9 420 082 325

Customer-spec. information  
Customer : FORD -FNH

Engine : 7.8 l

1st version kW : 180.0  
Speed 1/min: 2500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference<sup>o</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 14.60...14.70  
-----  
Del.quantity cm3/ : 15.5...15.7  
-----  
100H.: (15.3...15.9)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 650.0  
Contr.-rod trav. m: 5.9...6.1  
Del.quantity cm3/ : 1.1...1.5  
100H.: (0.8...1.7)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

#### SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...1.00

Governor-spring reload  
Notch setting x : 3.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1200  
Charge press. hPa : 1000  
Del.quantity cm3/ : 155.0...157.0  
1000H.: (153.0...159.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 48...56

Testing:  
1st c-rod trav.mm : 13.60  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1305...1325  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.70

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 22...30  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 5.5

Testing:  
Speed 1/min : 600  
C-rod trav.mm min : 10.00  
Speed 1/min : 650  
C-rod trav.mm : 5.90...6.10  
C-rod trav.mm : 2.00  
Speed 1/min : 770...830

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 14.60...14.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 11.50...11.60  
2nd pressure hPa : 600  
C-rod trav.mm : 14.00...14.10  
3rd pressure hPa : 350  
C-rod trav.mm : 12.40...12.60

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1000  
Speed 1/min : 800  
Del.quantity cm3/ : 131.0...135.0  
1000H.: (129.0...137.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 66.0...68.0  
1000H.: (64.0...70.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 13.60

Speed 1/min : 1260...1270

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 135.0...155.0

1000H.: (131.0...159.0)

Contr.-rod trav.mm: 20.00...21.00

## LOW IDLE

Speed 1/min : 650

Contr.-rod trav.mm: 5.90...6.10

Del.quantity cm3/ : 11.0...15.0

1000H.: (8.5...17.5)

Dispersion cm3/ : 3.50

1000H.: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 D  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 379

Injection pump  
Pump designation : PES6P110A720RS3150  
EP type number : 9 400 087 046  
Governor  
Governor design. : RQV350...1200PA863  
Governor no. : 9 420 080 242

Customer-spec. information  
Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 138.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference<sup>o</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 13.00...13.10  
-----  
Del.quantity cm3/ : 12.7...12.9  
                  100H.: (12.5...13.1)  
-----  
Dispersion cm3/ : 0.5  
                  100H.: (0.9)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 8.0...8.2  
Del.quantity cm3/ : 2.3...2.7  
                  100H.: (2.0...2.9)  
Dispersion cm3/ : 0.3  
                  100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 1300  
Sleeve travel mm: 8.40...8.50  
2nd speed 1/min: 1000  
Sleeve travel mm: 6.00...6.40  
3rd speed 1/min: 800  
Sleeve travel mm: 4.90...5.30  
4th speed 1/min: 500  
Sleeve travel mm: 3.10...3.50  
5th speed 1/min: 350  
Sleeve travel mm: 1.60...2.30

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1440  
Contr.-rod travelmm: 8.00...0.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1200  
Charge press. hPa : 600  
Del.quantity cm3/ : 127.5...129.5  
                  1000H.: (125.5...131.5)  
Dispersion cm3/ : 5.00  
                  1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 42...50

Testing:  
1st c-rod trav.mm : 12.00  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1385...1415  
4th speed 1/min : 1500  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 8.1

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 12.00  
Speed 1/min : 350  
C-rod trav.mm : 8.00...8.20  
C-rod trav.mm : 2.00  
Speed 1/min : 495...555

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1200  
C-rod trav.mm : 13.00...13.10  
2nd speed 1/min : 750  
C-rod trav.mm : 13.80...13.90  
4th speed 1/min : 975  
C-rod trav.mm : 13.40...13.50

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 12.20...12.30  
2nd pressure hPa : 267  
C-rod trav.mm : 12.60...12.70  
3rd pressure hPa : 335  
C-rod trav.mm : 13.30...13.50

SWITCH-OVER POINT

Speed 1/min : 290 (310)

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 600  
Speed 1/min : 750  
Del.quantity cm3/ : 115.0...119.0  
1000H.: (113.0...121.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 74.5...76.5  
1000H.: (72.5...78.5)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 12.00  
Speed 1/min : 1260...1270

STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.00...8.20  
Del.quantity cm3/ : 23.0...27.0  
1000H.: (20.5...29.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 E  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113

Combination no. : 9 400 087 380

Injection pump  
Pump designation : PES6P110A72ORS3151  
EP type number : 9 400 087 047  
Governor  
Governor design. : RQV350...1200PA863-1  
Governor no. : 9 420 080 243

Customer-spec. information  
Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 157.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>0</sup> : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference <sup>0</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 13.30...13.40  
-----  
Del.quantity cm3/ : 13.2...13.4  
-----  
100H.: (13.0...13.6)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 8.0...8.2  
Del.quantity cm3/ : 2.6...3.0  
100H.: (2.3...3.2)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.60...2.30  
2nd speed 1/min: 500  
Sleeve travel mm: 3.10...3.50  
3rd speed 1/min: 800  
Sleeve travel mm: 4.90...5.30  
4th speed 1/min: 1000  
Sleeve travel mm: 6.00...6.40  
5th speed 1/min: 1300  
Sleeve travel mm: 8.40...8.50

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1440  
Contr.-rod travelmm: 8.00...0.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

##### 1st version

Speed 1/min: 1200  
Charge press. hPa : 600  
Del.quantity cm3/ : 132.0...134.0  
1000H.: (130.0...136.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

##### 1st version

Control-lever  
position degrees: 43...51

##### Testing:

1st c-rod trav.mm : 12.30  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1390...1420  
4th speed 1/min : 1520  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21

##### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 12.00  
Speed 1/min : 350  
C-rod trav.mm : 8.00...8.20  
C-rod trav.mm : 2.00  
Speed 1/min : 495...555

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1200  
C-rod trav.mm : 12.30...12.40  
2nd speed 1/min : 750  
C-rod trav.mm : 14.00...14.10  
4th speed 1/min : 975  
C-rod trav.mm : 13.80...13.90

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 11.90...12.00  
2nd pressure hPa : 420  
C-rod trav.mm : 12.50...12.60  
3rd pressure hPa : 505  
C-rod trav.mm : 13.40...13.60

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 600  
Speed 1/min : 750  
Del.quantity cm3/ : 116.0...120.0  
1000H.: (114.0...122.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 70.0...72.0  
1000H.: (68.0...74.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.30  
Speed 1/min : 1260...1270

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 150.0...170.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.00...8.20  
Del.quantity cm3/ : 26.0...30.0  
1000H.: (23.5...32.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 D 1  
 Edition : 12.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 381  
 Injection pump  
 Pump designation : PES6P110A72ORS3150  
 EP type number : 9 400 087 046  
 Governor  
 Governor design. : RQV350...1200PA863-3  
 Governor no. : 9 420 080 244

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 160.0  
 Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference<sup>o</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed	1/mi: 1200
-----	
Contr.-rod trav.mm:	12.90...13.00
-----	
Del.quantity cm3/ :	12.5...12.7
-----	
100H.: (12.3...12.9)	
-----	
Dispersion cm3/ :	0.5
-----	
100H.: (0.9)	
-----	
2nd speed	1/min: 350.0
Contr.-rod trav. m:	8.0...8.2
Del.quantity cm3/ :	2.3...2.7
-----	
100H.: (2.1...2.9)	
Dispersion cm3/ :	0.3
-----	
100H.: (0.5)	

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed	1/min: 350
Sleeve travel mm:	1.60...2.30
2nd speed	1/min: 500
Sleeve travel mm:	3.10...3.50
3rd speed	1/min: 800
Sleeve travel mm:	4.90...5.30
4th speed	1/min: 1000
Sleeve travel mm:	6.00...6.40
5th speed	1/min: 1300
Sleeve travel mm:	8.40...8.50

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1440  
Contr.-rod travelmm: 8.00...0.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

##### 1st version

Speed	1/min: 1200
Charge press. hPa :	600
Del.quantity cm3/ :	125.5...127.5
-----	
1000H.: (123.5...129.5)	
Dispersion cm3/ :	5.00
-----	
1000H.: (9.00)	

#### HIGHEST RATED SPEED

##### 1st version

Control-lever  
position degrees: 42...50

##### Testing:

1st c-rod trav.mm :	11.90
Speed 1/min :	1260...1270
2nd c-rod trav.mm :	4.00
Speed 1/min :	1380...1410
4th speed 1/min :	1500
C-rod trav.mm :	0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21

##### Testing:

Speed	1/min : 100
C-rod trav.mm min :	12.00
Speed	1/min : 350
C-rod trav.mm :	8.00...8.20
C-rod trav.mm :	2.00
Speed	1/min : 495...555

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed	1/min : 1200
C-rod trav.mm :	12.90...13.00
2nd speed	1/min : 750
C-rod trav.mm :	14.00...14.10
4th speed	1/min : 975
C-rod trav.mm :	13.50...13.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 12.90...13.00  
2nd pressure hPa : 333  
C-rod trav.mm : 13.20...13.30  
3rd pressure hPa : 380  
C-rod trav.mm : 13.70...13.90

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 600  
Speed 1/min : 750  
Del.quantity cm3/ : 117.0...121.0  
1000H.: (115.0...123.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 84.0...86.0  
1000H.: (82.0...88.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
Imm control-rod travel less than

full-load trav.mm: 11.90  
Speed 1/min : 1260...1270

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 150.0...170.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.00...8.20  
Del.quantity cm3/ : 23.0...27.0  
1000H.: (21.0...29.0)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 E 1  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 9 400 087 382  
  
Injection pump  
Pump designation : PES6P110A72ORS3151  
EP type number : 9 400 087 047  
Governor  
Governor design. : RQV350...1200PA863-2  
Governor no. : 9 420 080 245

Customer-spec. information  
Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 160.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-00-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod tray max. : 21.00  
Difference<sup>0</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 13.70...13.80  
-----  
Del.quantity cm3/ : 13.6...13.8  
-----  
100H.: (13.4...14.0)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 8.0...8.2  
Del.quantity cm3/ : 2.4...2.8  
100H.: (2.1...3.0)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.60...2.30  
2nd speed 1/min: 500  
Sleeve travel mm: 3.10...3.50  
3rd speed 1/min: 800  
Sleeve travel mm: 4.90...5.30  
4th speed 1/min: 1000  
Sleeve travel mm: 6.00...6.40  
5th speed 1/min: 1300  
Sleeve travel mm: 8.40...8.50

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1440  
Contr.-rod travelmm: 8.00...0.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1200  
Charge press. hPa : 600  
Del.quantity cm3/ : 136.0...138.0  
1000H.: (134.0...140.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 43...51

Testing:  
1st c-rod trav.mm : 12.70  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1400...1430  
4th speed 1/min : 1530  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 12.00  
Speed 1/min : 350  
C-rod trav.mm : 8.00...8.20  
C-rod trav.mm : 2.00  
Speed 1/min : 495...555

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1200  
C-rod trav.mm : 13.70...13.80  
2nd speed 1/min : 750  
C-rod trav.mm : 14.30...14.40  
4th speed 1/min : 975  
C-rod trav.mm : 14.10...14.20

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 600  
Contr.-rod trav.mm: 14.30...14.40

Measurement  
Speed 1/min : 500



1st pressure hPa : -  
C-rod trav.mm : 12.40...12.50  
2nd pressure hPa : 345  
C-rod trav.mm : 12.90...13.00  
3rd pressure hPa : 420  
C-rod trav.mm : 13.60...13.80

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 600  
Speed 1/min : 750  
Del.quantity cm3/ : 119.0...123.0  
1000H.: (117.0...125.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 76.5...78.5  
1000H.: (74.5...80.5)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.70  
Speed 1/min : 1260...1270

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (-)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.00...8.20  
Del.quantity cm3/ : 24.0...28.0  
1000H.: (21.5...30.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 7,8 E 2  
 Edition : 12.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 087 383  
 Injection pump  
 Pump designation : PES6P110A72ORS3151  
 EP type number : 9 400 087 047  
 Governor  
 Governor design. : RQV350...1200PA863-4  
 Governor no. : 9 420 080 246

Customer-spec. information  
 Customer : FORD ( FNH )

Engine : 7.8 L TC

1st version kW : 179.0  
 Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 017

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,6

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35  
                  : (4.20...4.40)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 9.00...12.00  
& c-rod trav max. : 21.00  
Difference<sup>0</sup> CS : 2.00...3.00

#### BASIC SETTING

1st speed 1/mi: 1200  
-----  
Contr.-rod trav.mm: 14.50...14.60  
-----  
Del.quantity cm3/ : 14.9...15.1  
-----  
100H.: (14.7...15.3)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 8.0...8.2  
Del.quantity cm3/ : 2.4...2.8  
100H.: (2.1...3.0)  
Dispersion cm3/ : 0.3  
100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 350  
Sleeve travel mm: 1.60...2.30  
2nd speed 1/min: 500  
Sleeve travel mm: 3.10...3.50  
3rd speed 1/min: 800  
Sleeve travel mm: 4.90...5.30  
4th speed 1/min: 1000  
Sleeve travel mm: 6.00...6.40  
5th speed 1/min: 1300  
Sleeve travel mm: 8.40...8.50

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1440  
Contr.-rod travelmm: 8.00...0.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

##### 1st version

Speed 1/min: 1200  
Charge press. hPa : 700  
Del.quantity cm3/ : 149.5...151.5  
1000H.: (147.5...153.5)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

##### 1st version

Control-lever  
position degrees: 44...52

##### Testing:

1st c-rod trav.mm : 13.50  
Speed 1/min : 1260...1270  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1410...1440  
4th speed 1/min : 1520  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21

##### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 12.00  
Speed 1/min : 350  
C-rod trav.mm : 8.00...8.20  
C-rod trav.mm : 2.00  
Speed 1/min : 495...555

#### CONSTANT REGULATION

Speed 1/min : 390...460

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1200  
C-rod trav.mm : 14.50...14.60  
2nd speed 1/min : 750  
C-rod trav.mm : 15.00...15.10  
4th speed 1/min : 975  
C-rod trav.mm : 14.70...14.80

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 700  
Contr.-rod trav.mm: 15.00...15.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 12.10...12.20  
2nd pressure hPa : 430  
C-rod trav.mm : 13.30...13.40  
3rd pressure hPa : 532  
C-rod trav.mm : 14.30...14.50

#### SWITCH-OVER POINT

Speed 1/min : 290 (310)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 700  
Speed 1/min : 750  
Del.quantity cm3/ : 128.0...132.0  
1000H.: (126.0...134.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 72.0...74.0  
1000H.: (70.0...76.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 13.50  
Speed 1/min : 1260...1270

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (-)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.00...8.20  
Del.quantity cm3/ : 24.0...28.0  
1000H.: (21.5...30.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before  
shutoff,

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 C 4  
Edition : 06.11.87  
Superceeded : 7.86  
Calibrating oil : ISO-4113

Combination no. : 9 400 230 045

Injection pump  
Pump designation : PES6A95D41ORS2522-1  
EP type number : 9 410 230 017  
Governor  
Governor design. : RSV425...1100A2C2161  
L  
Governer no. : 9 420 234 140

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 106.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
: (1.80...2.00)

Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 9.00...9.10

Del.quantity cm3/ : 8.6...8.8

100H.: (8.4...9.0)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 425.0

Contr.-rod trav. m: 5.5...5.7

Del.quantity cm3/ : 1.8...2.2

100H.: (1.5...2.4)

Dispersion cm3/ : 0.3

100H.: (0.5)

#### SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Charge press. hPa : 500

Del.quantity cm3/ : 86.5...88.5

1000H.: (84.0...90.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 46...54

Testing:

1st c-rod trav.mm : 8.00

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1185...1195

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 21...29

Setting point w/out aux. spring

Speed 1/min : 425

Contr.-rod trav.mm: 5.1

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 425

C-rod trav.mm : 5.50...5.70

C-rod trav.mm : 2.00

Speed 1/min : 590...650

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 9.00...9.10

2nd speed 1/min : 650

C-rod trav.mm : 10.40...10.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version

Setting

Speed 1/min : 500

Pressure hPa : -

Contr.-rod trav.mm: 10.20...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 100

C-rod trav.mm : 10.30...10.40

2nd pressure hPa : 149

C-rod trav.mm : 10.40...10.60

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa : 500

Speed 1/min : 650

Del.quantity cm3/ : 102.5...105.5

1000H.: (100.0...108.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : -

1000H.: (87.0...95.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.00  
Speed 1/min : 1145...1155

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000H.: (150.0...180.0)  
Contr.-rod trav.mm: 19.00...21.00

#### HIGH IDLE

1st version  
Speed 1/min : 1180  
Contr.-rod trav.mm: 5.30...5.50

#### LOW IDLE

Speed 1/min : 425  
Contr.-rod trav.mm: 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000H.: (15.5...24.5)  
Dispersion cm<sup>3</sup>/ : 3.50  
1000H.: (5.50)

#### Remarks:

: JOHN DEERE  
Setting without torque-control spring  
retainer with 1 mm control-rod travel  
less. Raising of full-load delivery  
with torque-control spring retainer to  
9,0 mm control-rod travel.

Start-of-delivery mark 16° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 H 6  
 Edition : 06.11.87  
 Superceeded : 7.86  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 070  
 Injection pump  
 Pump designation : PES6A100D41ORS2676-1  
 EP type number : 9 410 230 024  
 Governor  
 Governor design. : RSV400...950A1C2186-2L  
 Governor no. : 9 420 234 150

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 102.0  
 Speed 1/min: 1900

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 9 681 271 001

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 950

Contr.-rod trav.mm: 10.50...10.60

Del.quantity cm3/ : 9.7...9.9

100H.: (9.5...10.1)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 400.0

Contr.-rod trav. m: 6.5...6.7

Del.quantity cm3/ : 1.8...2.2

100H.: (1.5...2.4)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 950

Del.quantity cm3/ : 97.0...99.0

1000H.: (95.0...101.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 47...55

Testing:

1st c-rod trav.mm : 9.50

Speed 1/min : 995...1005

2nd c-rod trav.mm : 4.00

Speed 1/min : 1045...1055

3rd c-rod trav.mm : 4.00

Speed 1/min : 1050...1080

4th speed 1/min : 1150



C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 22...30

Setting point w/out aux. spring

Speed 1/min : 400

Contr.-rod trav.mm: 6.1

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 400

C-rod trav.mm : 6.50...6.70

C-rod trav.mm : 2.00

Speed 1/min : 535...595

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 950

C-rod trav.mm : 10.50...10.60

2nd speed 1/min : 650

C-rod trav.mm : 11.90...12.10

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 650

Del.quantity cm<sup>3</sup>/ : 115.0...118.0

1000H.: (112.5...120.5)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.50

Speed 1/min : 995...1005

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm<sup>3</sup>/ : 19.8...21.2

1000H.: (19.5...21.5)

Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 400

Contr.-rod trav.mm: 6.50...6.70

Del.quantity cm<sup>3</sup>/ : 18.0...22.0

1000H.: (15.5...24.5)

Dispersion cm<sup>3</sup>/ : 3.50

1000H.: (5.50)

Remarks:

:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

K04

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 5,9 A  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 230 104  
Injection pump  
Pump designation : PES6A95D320RS2724  
EP type number : 9 410 230 029  
Governor  
Governor design. : RQV350...1350AB1224R  
Governor no. : 9 420 231 016

Customer-spec. information  
Customer : NAVISTAR

Engine : MARS DT 360

1st version kW : 123.0  
Speed 1/min: 2700

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Calibrating nozzle-holder  
assembly : 1 688 901 025

Opening  
pressure, bar : 172...175

Perforated-plate  
diameter mm : 0,5

Test inj. tubing : 9 681 271 001

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1350

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 7.5...7.7

100H.: (7.3...7.9)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 1.5...1.9

100H.: (1.2...2.1)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1400

Sleeve travel mm: 8.50...8.50

2nd speed 1/min: 1500

Sleeve travel mm: 9.30...9.50

3rd speed 1/min: 350

Sleeve travel mm: 1.00...1.00

4th speed 1/min: 450

Sleeve travel mm: 1.90...2.40

5th speed 1/min: 250

Sleeve travel mm: 0.10...0.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1550

Contr.-rod travelmm: 6.70...9.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1350

Charge press. hPa : 900

Del.quantity cm3/ : 75.5...77.5  
1000H.: (73.5...79.5)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 49...55

Testing:  
1st c-rod trav.mm : 10.50  
Speed 1/min : 1390...1420  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1505...1515  
4th speed 1/min : 1600  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...15  
Speed 1/min : 350  
C-rod trav.mm : 5.30...5.50  
Speed 1/min : 250  
C-rod trav.mm max : 7.80

#### CONSTANT REGULATION

Speed 1/min : 350...500

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : -  
Contr.-rod trav.mm: 9.10...9.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 466  
C-rod trav.mm : 10.40...10.80  
2nd pressure hPa : 227  
C-rod trav.mm : 9.60...9.70  
3rd pressure hPa : 900  
C-rod trav.mm : 11.00...11.30

#### SWITCH-OVER POINT

Speed 1/min : 290 (300)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : -  
Speed 1/min : 500

K06

Del.quantity cm3/ : -  
1000H.: (66.0...74.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.50  
Speed 1/min : 1390...1420

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 15.0...15.0  
1000H.: (14.5...14.5)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.30...5.50  
Del.quantity cm3/ : 15.0...19.0  
1000H.: (12.5...21.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

Limit shutoff stop screw to 1.0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 5,9 A 1  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 230 105  
Injection pump  
Pump designation : PES6A95D32ORS2724  
EP type number : 9 410 230 029  
Governor  
Governor design. : RQV350...135OAB1221R  
Governor no. : 9 420 231 017

Customer-spec. information  
Customer : NAVISTAR

Engine : MARS DTA360

1st version kW : 134.0  
Speed 1/min: 2700

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Calibrating nozzle-holder  
assembly : 1 688 901 025

Opening  
pressure, bar : 172...175

Perforated-plate  
diameter mm : 0,5

Test inj. tubing : 9 681 271 001

Outside diameter  
x Wall thickness  
x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1350

Contr.-rod trav.mm: 11.50...11.60

Del.quantity cm3/ : 8.0...8.2

100H.: (7.8...8.4)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 1.5...1.9

100H.: (1.2...2.1)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1400

Sleeve travel mm: 8.50...8.50

2nd speed 1/min: 1500

Sleeve travel mm: 9.30...9.50

3rd speed 1/min: 350

Sleeve travel mm: 1.00...1.00

4th speed 1/min: 450

Sleeve travel mm: 1.90...2.40

5th speed 1/min: 250

Sleeve travel mm: 0.10...0.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1550

Contr.-rod travelmm: 6.70...9.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1350

Charge press. hPa : 900

Del.quantity cm3/ : 80.0...82.0  
1000H.: (78.0...84.0)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 49...55

Testing:  
1st c-rod trav.mm : 10.50  
Speed 1/min : 1395...1425  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1525...1535  
4th speed 1/min : 1600  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...15  
Speed 1/min : 350  
C-rod trav.mm : 5.30...5.50  
C-rod trav.mm : 2.00  
Speed 1/min : 420...480  
Speed 1/min : 250  
C-rod trav.mm max : 7.80

#### CONSTANT REGULATION

Speed 1/min : 350...500

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : -  
Contr.-rod trav.mm: 9.90...10.10

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 339  
C-rod trav.mm : 10.90...11.30  
2nd pressure hPa : 157  
C-rod trav.mm : 10.30...10.40

#### SWITCH-OVER POINT

Speed 1/min : 290 (300)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 500

K08

Del.quantity cm3/ : -  
1000H.: (74.0...82.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.50  
Speed 1/min : 1395...1425

#### MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 150.0...150.0  
1000H.: (145.0...145.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 5.30...5.50  
Del.quantity cm3/ : 15.0...19.0  
1000H.: (12.5...21.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

#### Remarks:

: NAVISTAR #  
: 1 810 221 C92  
Limit shutoff stop screw to 1.0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 8,3 B 3  
Edition : 06.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 9 400 230 107  
Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2  
EP type number : 9 410 230 028  
Governor  
Governor design. : RQV350...1200AB1233R  
Governor no. : 9 420 231 018

Customer-spec. information  
Customer : C.D.C

Engine : 6CT830

1st version kW : 157.0  
Speed 1/min: 2400

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 172...175

Perforated-plate  
diameter mm : 0,6

Test inj. tubing : 9 681 271 029

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 27...29

K09

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1200

Contr.-rod trav.mm: 10.80...10.90

Del.quantity cm3/ : 11.3...11.5

100H.: (11.1...11.7)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 4.6...4.8

Del.quantity cm3/ : 1.6...2.0

100H.: (1.3...2.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 0.00...0.20

2nd speed 1/min: 350

Sleeve travel mm: 1.00...1.50

3rd speed 1/min: 450

Sleeve travel mm: 1.90...2.40

4th speed 1/min: 1200

Sleeve travel mm: 6.90...6.90

5th speed 1/min: 1350

Sleeve travel mm: 8.15...8.65

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1435

Contr.-rod travelmm: 6.70...9.30

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1200

Charge press. hPa : 500

Del.quantity cm3/ : 113.0...115.0  
1000H.: (111.0...117.0)  
Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 40...46

#### Testing:

1st c-rod trav.mm : 9.80  
Speed 1/min : 1240...1250  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1315...1345  
4th speed 1/min : 1400  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...15  
Speed 1/min : 350  
C-rod trav.mm : 4.60...4.80  
C-rod trav.mm : 2.00  
Speed 1/min : 480...540

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 240  
Contr.-rod trav.mm: 9.70...9.80

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 9.30...9.50  
2nd pressure hPa : 333  
C-rod trav.mm : 10.20...10.60  
3rd pressure hPa : 500  
C-rod trav.mm : 10.70...11.00

#### SWITCH-OVER POINT

Speed 1/min : 290 (300)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : -  
1000H.: (82.5...90.5)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 9.80  
Speed 1/min : 1240...1250

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 150.0...170.0  
1000H.: (145.0...175.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 4.60...4.80  
Del.quantity cm3/ : 16.0...20.0  
1000H.: (13.5...22.5)  
Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

: C.D.C. # 390558

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Limit shutoff stop screw to 1.0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 N 1  
Edition : 07.12.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113  
  
Combination no. : 0 400 646 266  
  
Injection pump  
Pump designation : PE6A95D410LS2587  
EP type number : 0 410 696 983  
Governor  
Governor design. : RQV300...1150AB1088L  
Governer no. : 0 420 212 115

Customer-spec. information  
Customer : KHD

Engine : F6L413 FW

1st version kW : 106.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60  
: (1.45...1.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 6- 5- 4- 3- 2

SD ang. spacing<sup>0</sup>CS: 0-75-120-195-240-315  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 8.30...8.40

Del.quantity cm3/ : 7.2...7.4

100H.: (7.0...7.6)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 5.9...6.1

Del.quantity cm3/ : 0.9...1.5

100H.: (0.6...1.7)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 1.20...1.30

2nd speed 1/min: 400

Sleeve travel mm: 2.30...2.70

3rd speed 1/min: 600

Sleeve travel mm: 3.00...3.50

4th speed 1/min: 1195

Sleeve travel mm: 8.40...8.50

5th speed 1/min: 1235

Sleeve travel mm: 8.90...9.10

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1190

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Del.quantity cm3/ : 72.0...74.0

1000H.: (70.0...76.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)



## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 7.30  
Speed 1/min : 1190...1200  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1220...1250  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 12...20

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.00  
Speed 1/min : 300  
C-rod trav.mm : 6.40...6.60

CONSTANT REGULATION  
Speed 1/min : 320...420

TORQUE CONTROL  
Dimension a mm : 1.00  
Torque-control curve - 1st version  
1st speed 1/min : 1150  
C-rod trav.mm : 8.30...8.40  
2nd speed 1/min : 500  
C-rod trav.mm : 9.30...9.40  
3rd speed 1/min : 935  
C-rod trav.mm : 9.00...9.20  
4th speed 1/min : 1045  
C-rod trav.mm : 8.50...8.70

## SWITCH-OVER POINT

Speed 1/min : 220 (240)

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 800  
Del.quantity cm3/ : 78.0...81.0  
1000H.: (75.5...83.5)  
Speed 1/min : 800  
Del.quantity cm3/ : 98.5...101.5  
1000H.: (96.0...104.0)

## SETTING CONTROL-ROD STOP

Speed 1/min : 500

## ROTATIONAL-SPEED LIMITATION

K12

1st version  
1mm control-rod travel less than  
full-load trav.mm: 7.30  
Speed 1/min : 1190...1200

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 120.0...130.0  
1000H.: (117.0...133.0)  
Contr.-rod trav.mm: 14.40...14.80

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

When accelerating from engine speed  
"0", no voltage in starting solenoid.  
APPLICATION  
Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 15.8 N1  
 Edition : 07.12.87  
 Superceeded : 15.5.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 400 649 219  
 Injection pump  
 Pump designation : PE10A9SD610/4LS2589  
 EP type number : 0 410 699 994  
 Governor  
 Governor design. : RQV300...1150AB1047D  
 L  
 Governor no. : 0 420 214 242  
 Customer-spec. information  
 Customer : KHD  
 Engine : F10L413 FW  
 1st version kW : 177.0  
 Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.00  
 Calibrating nozzle-holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test inj. tubing : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 1.50...1.60  
 : (1.45...1.65)

K13

Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1-10- 9- 4- 3- 6- 5-  
 8- 7- 2

SD ang. spacing°CS: 0-27-72-99-144-171-  
 216-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1150  
 Contr.-rod trav.mm: 9.30...9.40  
 Del.quantity cm3/ : 6.9...7.1  
 100H.: (6.7...7.3)  
 Dispersion cm3/ : 0.3  
 100H.: (0.6)  
 2nd speed 1/min: 300.0  
 Contr.-rod trav. m: 7.2...7.4  
 Del.quantity cm3/ : 1.4...2.0  
 100H.: (1.1...2.2)  
 Dispersion cm3/ : 0.3  
 100H.: (0.5)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
 Sleeve travel mm: 1.20...1.30  
 2nd speed 1/min: 400  
 Sleeve travel mm: 2.20...2.60  
 3rd speed 1/min: 600  
 Sleeve travel mm: 3.00...3.50  
 4th speed 1/min: 1195  
 Sleeve travel mm: 8.40...8.50  
 5th speed 1/min: 1235  
 Sleeve travel mm: 9.10...9.30

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1190  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1150  
 Del.quantity cm3/ : 69.0...71.0  
 1000H.: (67.0...73.0)

Dispersion cm3/ : 3.50  
1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 8.30  
Speed 1/min : 1190...1200  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1230...1260  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 10...18

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.80  
Speed 1/min : 300  
C-rod trav.mm : 7.20...7.40

#### CONSTANT REGULATION

Speed 1/min : 320...430

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque-control curve - 1st version  
1st speed 1/min : 1150  
C-rod trav.mm : 9.30...9.40  
2nd speed 1/min : 500  
C-rod trav.mm : 10.30...10.40  
3rd speed 1/min : 935  
C-rod trav.mm : 10.00...10.20  
4th speed 1/min : 1045  
C-rod trav.mm : 9.50...9.70

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 800  
Del.quantity cm3/ : 75.5...78.5  
1000H.: (73.0...81.0)  
Speed 1/min : 800  
Del.quantity cm3/ : 98.5...101.5  
1000H.: (96.0...104.0)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 500

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 8.30  
Speed 1/min : 1190...1200

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 120.0...130.0  
1000H.: (117.0...133.0)  
Contr.-rod trav.mm: 15.40...15.80

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

2. Set fuel delivery in fuel-delivery  
characteristics with stop above the  
governor housing.

When accelerating from engine speed  
"0", no voltage in starting solenoid.

#### APPLICATION

Below-ground operation

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 C 5  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 400 876 337  
  
Injection pump  
Pump designation : PES6A90D41ORS2710  
EP type number : 0 410 896 082  
Governor  
Governor design. : RSV350...1400AOC1135  
-2L  
Governor no. : 0 420 232 473  
  
Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 96.0  
Speed 1/min: 2800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35  
: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1400  
-----  
Contr.-rod trav.mm: 11.00...11.10  
-----  
Del.quantity cm3/ : 6.4...6.5  
-----  
100H.: (6.2...6.7)  
-----  
Dispersion cm3/ : 0.3  
-----  
100H.: (0.5)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 8.8...9.4  
Del.quantity cm3/ : 1.0...1.4  
100H.: (0.8...1.6)  
Dispersion cm3/ : 0.2  
100H.: (0.4)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Cont.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : 6.00

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1400  
Del.quantity cm3/ : 64.0...65.0  
1000H.: (62.0...67.0)  
Dispersion cm3/ : 3.00  
1000H.: (5.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 59...67

Testing:  
1st c-rod trav.mm : 10.00  
Speed 1/min : 1435...1440  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1475...1488  
3rd c-rod trav.mm : 4.00  
Speed 1/min : 1515...1545

4th speed 1/min : 1575  
C-rod trav.mm : 0.30...1.40  
5th speed 1/min : 1440...1450  
C-rod trav.mm : 10.00

Del.quantity cm3/ : 10.0...14.0  
1000H.: (8.0...16.0)  
Dispersion cm3/ : 2.50  
1000H.: (4.50)

#### LOWEST RATED SPEED I

Control-lever  
position degrees: -3  
Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 9.10

Remarks:

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 350  
C-rod trav.mm : 9.00...9.20  
C-rod trav.mm : 2.00  
Speed 1/min : 470...530

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1400  
C-rod trav.mm : 11.00...11.10  
2nd speed 1/min : 500  
C-rod trav.mm : 12.10...12.20  
3rd speed 1/min : 750  
C-rod trav.mm : 11.80...12.00  
4th speed 1/min : 950  
C-rod trav.mm : 11.40...11.70

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 600  
Del.quantity cm3/ : 52.0...54.0  
1000H.: (49.5...56.5)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1435...1440

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 78.0...88.0  
1000H.: (75.0...91.0)  
Contr.-rod trav.mm: 16.90...17.30

#### LOW IDLE

Speed 1/min : 350  
Contr.-rod trav.mm: 8.80...9.40

K16

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 19,1 0 1  
Edition : 07.12.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113

Combination no. : 0 401 840 106

Injection pump  
Pump designation : PE12P110A32OLS855  
EP type number : 0 411 810 046  
Governor  
Governor design. : RQV350...1150PA493R  
Governor no. : 0 421 813 237

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 404 A

1st version kW : 386.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...170

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
                  : (3.15...3.35)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

SD ang. spacing<sup>o</sup>CS: 0-45-60-105-120-165-  
                          180-225-240-285-300-  
SD ang. spacing<sup>o</sup>CS: 345  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 12

#### BASIC SETTING

1st speed 1/mi: 1130  
-----  
Contr.-rod trav.mm: 13.10...13.20  
-----  
Del.quantity cm3/ : 14.0...14.2  
-----  
                  100H.: (13.7...14.5)  
-----  
Dispersion cm3/ : 0.4  
-----  
                  100H.: (0.8)  
-----  
2nd speed 1/min: 350.0  
Contr.-rod trav. m: 7.5...7.7  
Del.quantity cm3/ : 1.8...2.4  
                  100H.: (1.5...2.6)  
Dispersion cm3/ : 0.4  
                  100H.: (0.7)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 300  
Sleeve travel mm: 0.90...1.20  
2nd speed 1/min: 450  
Sleeve travel mm: 3.00...3.30  
3rd speed 1/min: 1200  
Sleeve travel mm: 8.50...9.00  
4th speed 1/min: 1300  
Sleeve travel mm: 9.80...10.60

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1180  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1130  
Charge press. hPa : 700

Del.quantity cm3/ : 140.0...142.0  
                  1000H.: (137.0...145.0)  
Dispersion cm3/ : 4.00  
                  1000H.: (8.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 62...70

Testing:  
1st c-rod trav.mm : 12.10  
Speed 1/min : 1185...1195  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1295...1325  
4th speed 1/min : 1450  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 10...18

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 8.60  
Speed 1/min : 350  
C-rod trav.mm : 7.00...7.20  
C-rod trav.mm : 2.00  
Speed 1/min : 690...750

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : -  
Contr.-rod trav.mm: 12.70....12.90

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 395  
C-rod trav.mm : 13.00...13.10

#### SWITCH-OVER POINT

Speed 1/min : 270 (290)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 700  
Speed 1/min : 1130  
Del.quantity cm3/ : 99.0...103.0 \*  
                  1000H.: (96.0...106.0)

Dispersion cm3/ : 6.00  
1000H.: (9.00)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 121.0...123.0  
1000H.: (118.5...125.5)  
Dispersion cm3/ : 6.00  
1000H.: (-)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 12.10  
Speed 1/min : 1185...1195

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 130.0...150.0  
1000H.: (126.0...154.0)

Remarks:

\* = Set at reduced-delivery stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 12,2 A  
Edition : 20.11.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113

Combination no. : 0 401 846 826

Injection pump  
Pump designation : PE6P120A32ORS3178  
EP type number : 0 411 826 752  
Governor  
Governor design. : RQV250...102SPA657-  
10  
Governor no. : 0 421 813 567

Customer-spec. information  
Customer : VOLVO

Engine : TD122FS

1st version kW : 287.0  
Speed 1/min: 2050

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

K20

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 14.00...14.10

Del.quantity cm3/ : 25.2...25.4  
100H.: (24.9...25.7)

Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 250.0  
Contr.-rod trav. m: 4.80...5.10  
Del.quantity cm3/ : 1.8...2.3  
100H.: (1.5...2.5)  
Dispersion cm3/ : 0.5  
100H.: (0.7)

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1090  
Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 700  
Charge press. hPa : 1200  
Del.quantity cm3/ : 252.0...254.0  
1000H.: (249.0...257.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 61...69

Testing:  
1st c-rod trav.mm : 13.00  
Speed 1/min : 1055...1065  
2nd c-rod trav.mm : 4.00

Speed 1/min : 1140...1170  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 6...14

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.40  
Speed 1/min : 250  
C-rod trav.mm : 4.80...5.10

#### CONSTANT REGULATION

Speed 1/min : 250...400

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

#### 1st version

##### Setting

Speed 1/min : 500  
Pressure hPa : 1200  
Contr.-rod trav.mm: 14.00...14.10

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 9.90...10.10  
2nd pressure hPa : 90  
C-rod trav.mm : 10.20...10.30  
3rd pressure hPa : 870  
C-rod trav.mm : 13.60...13.90

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 163.0...165.0  
1000H.: (160.0...168.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 13.00  
Speed 1/min : 1055...1065

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 230.0...250.0  
1000H.: (226.0...254.0)  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 250  
Del.quantity cm3/ : 18.0...23.0  
1000H.: (15.5...25.5)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11,7 D1  
Edition : 12.11.87  
Superceeded : 9.10.87  
Calibrating oil : ISO-4113  
Combination no. : 0 401 846 831  
Injection pump  
Pump designation : PE6P120A32ORS3183-1Y  
EP type number : 0 411 826 765  
Governor  
Governor design. : RQ250/1000PA832  
Governer no. : 0 421 801 368

Customer-spec. information  
Customer : DAF

Engine : WS 282

1st version kW : 282.0  
Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 850  
Contr.-rod trav.mm: 13.10...13.20  
Del.quantity cm3/ : 21.9...22.1  
100H.: (21.6...22.4)  
Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 250.0  
Contr.-rod trav. m: 6.6...7.0  
Del.quantity cm3/ : 1.4...2.0  
100H.: (1.1...2.3)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 550  
Contr.-rod travelmm: 15.20...16.40

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 850  
Charge press. hPa : 1000  
Del.quantity cm3/ : 219.0...221.0  
1000H.: (216.0...224.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Setting point:  
Speed 1/min : 550  
Contr.-rod trav.mm: 15.8

Testing:  
1st c-rod trav.mm : 12.10  
Speed 1/min : 1035...1050  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1130...1160

4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 250  
Contr.-rod trav.mm: 6.8

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.30  
Speed 1/min : 250  
C-rod trav.mm : 6.60...7.00  
C-rod trav.mm : 2.00  
Speed 1/min : 350...390

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 850  
C-rod trav.mm : 13.30...13.40  
2nd speed 1/min : 1000  
C-rod trav.mm : 13.20...13.40

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 1000  
Contr.-rod trav.mm: 13.10...13.20

#### Measurement

Speed 1/min : 600  
1st pressure hPa : -  
C-rod trav.mm : 10.10...10.30  
2nd pressure hPa : 570  
C-rod trav.mm : 12.40...12.50  
3rd pressure hPa : 310  
C-rod trav.mm : 10.70...11.00

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 600  
Del.quantity cm3/ : 144.0...146.0  
1000H.: (141.0...149.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 12.10  
Speed 1/min : 1035...1050

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 260.0...300.0  
1000H.: (256.0...304.0)

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000H.: (11.0...23.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11,7 D2  
Edition : 12.11.87  
Superceeded : 9.10.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 846 835  
  
Injection pump  
Pump designation : PE6P120A32ORS3183-1  
EP type number : 0 411 826 758  
Governor  
Governor design. : RQ250/1000PA832  
Governor no. : 0 421 801 368

Customer-spec. information  
Customer : DAF

Engine : WS 259

1st version kW : 259.0  
Speed 1/min: 2000

### TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

### START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 850

Contr.-rod trav.mm: 12.10...12.20

Del.quantity cm3/ : 20.0...20.2

100H.: (19.7...20.5)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 6.6...7.0

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 550

Contr.-rod travelmm: 15.20...16.40

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

##### 1st version

Speed 1/min: 850

Charge press. hPa : 1000

Del.quantity cm3/ : 200.0...202.0

1000H.: (197.0...205.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

#### HIGHEST RATED SPEED

##### 1st version

Setting point:

Speed 1/min : 550

Contr.-rod trav.mm: 15.8

Testing:

1st c-rod trav.mm : 11.10

Speed 1/min : 1035...1050

2nd c-rod trav.mm : 4.00

Speed 1/min : 1125...1155

4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 250

Contr.-rod trav.mm: 6.8

Testing:

Speed 1/min : 100

C-rod trav.mm min : 8.30

Speed 1/min : 250

C-rod trav.mm : 6.60...7.00

C-rod trav.mm : 2.00

Speed 1/min : 350...390

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 850

C-rod trav.mm : 12.30...12.40

2nd speed 1/min : 1000

C-rod trav.mm : 12.20...12.40

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting

Speed 1/min : 600

Pressure hPa : 1000

Contr.-rod trav.mm: 12.10...12.20

Measurement

Speed 1/min : 600

1st pressure hPa : -

C-rod trav.mm : 10.10...10.30

2nd pressure hPa : 430

C-rod trav.mm : 11.60...11.70

3rd pressure hPa : 280

C-rod trav.mm : 10.50...10.70

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 600

Del.quantity cm3/ : 144.0...146.0

1000H.: (141.0...149.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.10

Speed 1/min : 1035...1050

STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 260.0...300.0  
1000H.: (256.0...304.0)

LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 6.60...7.00  
Del.quantity cm3/ : 16.0...22.0  
1000H.: (13.0...25.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11.7 E2  
Edition : 12.11.87  
Superceeded : 9.10.87  
Calibrating oil : ISO-4113

Combination no. : 0 401 846 840

Injection pump  
Pump designation : PE6P120A32ORS3183-1Z  
EP type number : 0 411 826 760  
Governor  
Governor design. : RQV250...1000PA851-1  
Governor no. : 0 421 813 605

Customer-spec. information  
Customer : DAF

Engine : WS 225

1st version kW : 225.0  
Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27



Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 850  
-----  
Contr.-rod trav.mm: 11.30...11.40  
-----  
Del.quantity cm3/ : 18.1...18.3  
-----  
100H.: (17.8...18.6)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 250.0  
Contr.-rod trav. m: 6.6...7.0  
Del.quantity cm3/ : 1.4...2.0  
100H.: (1.1...2.3)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 250  
Sleeve travel mm: 1.30...1.70  
2nd speed 1/min: 400  
Sleeve travel mm: 3.20...3.60  
3rd speed 1/min: 800  
Sleeve travel mm: 5.80...6.20  
4th speed 1/min: 1000  
Sleeve travel mm: 7.90...8.10

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1040  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 850  
Charge press. hPa : 1000  
Del.quantity cm3/ : 181.0...183.0  
1000H.: (178.0...186.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 50...58

#### Testing:

1st c-rod trav.mm : 10.30  
Speed 1/min : 1040...1050  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1120...1150  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 15...23

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.30  
Speed 1/min : 250  
C-rod trav.mm : 6.60...7.00

#### CONSTANT REGULATION

Speed 1/min : 275...385

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 1000  
Contr.-rod trav.mm: 11.30...11.40

#### Measurement

Speed 1/min : 600  
1st pressure hPa : -  
C-rod trav.mm : 10.10...10.30  
2nd pressure hPa : 330  
C-rod trav.mm : 11.00...11.10  
3rd pressure hPa : 260  
C-rod trav.mm : 10.50...10.70

#### SWITCH-OVER POINT

Speed 1/min : 200 (220)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 600  
Del.quantity cm3/ : 144.0...146.0  
1000H.: (141.0...149.0)

# ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.30

Speed 1/min : 1040...1050

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 260.0...300.0

1000H.: (256.0...304.0)

## LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 6.60...7.00

Del.quantity cm3/ : 14.0...20.0

1000H.: (11.0...23.0)

Dispersion cm3/ : 8.00

1000H.: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DAF 11,7 E3  
Edition : 12.11.87  
Superceeded : 9.10.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 846 841  
  
Injection pump  
Pump designation : PE6P120A320RS3183-1  
EP type number : 0 411 826 758  
Governor  
Governor design. : RQV250...1000PA851-2  
Governor no. : 0 421 813 606

Customer-spec. information  
Customer : DAF

Engine : WS 259

1st version kW : 259.0  
Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
× Wall thickness  
× Length mm : 6.00X1.50X1000

(F) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80  
                  : (3.65...3.85)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

#### BASIC SETTING

1st speed 1/mi: 850  
-----  
Contr.-rod trav.mm: 12.10...12.20  
-----  
Del.quantity cm3/ : 20.0...20.2  
-----  
100H.: (19.7...20.5)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----  
2nd speed 1/min: 250.0  
Contr.-rod trav. m: 6.6...7.0  
Del.quantity cm3/ : 1.4...2.0  
100H.: (1.1...2.3)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 250  
Sleeve travel mm: 1.30...1.70  
2nd speed 1/min: 400  
Sleeve travel mm: 3.20...3.60  
3rd speed 1/min: 800  
Sleeve travel mm: 5.80...6.20  
4th speed 1/min: 1000  
Sleeve travel mm: 7.90...8.10

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1040  
Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 850  
Charge press. hPa : 1000  
Del.quantity cm3/ : 200.0...202.0  
1000H.: (197.0...205.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 51...59

#### Testing:

1st c-rod trav.mm : 11.10  
Speed 1/min : 1040...1050  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1120...1150  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 16...24

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 8.30  
Speed 1/min : 250  
C-rod trav.mm : 6.60...7.00

#### CONSTANT REGULATION

Speed 1/min : 275...385

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 1000  
Contr.-rod trav.mm: 12.10...12.20

#### Measurement

Speed 1/min : 600  
1st pressure hPa : -  
C-rod trav.mm : 10.10...10.30  
2nd pressure hPa : 430  
C-rod trav.mm : 11.60...11.70  
3rd pressure hPa : 280  
C-rod trav.mm : 10.50...10.70

#### SWITCH-OVER POINT

Speed 1/min : 200 (0)

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : -  
Speed 1/min : 600  
Del.quantity cm3/ : 144.0...146.0  
1000H.: (141.0...149.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 11.10  
Speed 1/min : 1040...1050

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 260.0...300.0  
1000H.: (256.0...304.0)

## LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 6.60...7.00  
Del.quantity cm3/ : 14.0...20.0  
1000H.: (11.0...23.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 13,8 I2  
Edition : 12.11.87  
Superceeded : 27.3.87  
Calibrating oil : ISO-4113  
Combination no. : 0 401 846 843  
Injection pump  
Pump designation : PE6P120A72ORS3069  
EP type number : 0 411 826 712  
Governor  
Governor design. : RQV300...1000PA501-4  
Governor no. : 0 421 813 609

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8210.22.373

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 12.50...12.60

Del.quantity cm3/ : 20.5...20.7

100H.: (20.2...21.0)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 6.0...6.4

Del.quantity cm3/ : 1.7...2.3  
100H.: (1.4...2.6)

Dispersion cm3/ : 0.8

100H.: (1.2)

(B) Setting of injection pump with  
externally-mounted governor

#### SLEEVE TRAVELS

1st speed 1/min: 325

Sleeve travel mm: 1.50...1.90

2nd speed 1/min: 450

Sleeve travel mm: 2.90...3.30

3rd speed 1/min: 800

Sleeve travel mm: 5.70...6.10

4th speed 1/min: 1000

Sleeve travel mm: 8.00...8.20

#### SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1035

Contr.-rod travelmm: 15.20...17.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

##### 1st version

Speed 1/min: 1000

Charge press. hPa : 700

Del.quantity cm3/ : 205.0...207.0  
1000H.: (202.0...210.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

#### HIGHEST RATED SPEED

L06

##### 1st version

Control-lever

position degrees: 60...68

##### Testing:

1st c-rod trav.mm : 11.50

Speed 1/min : 1040...1050

2nd c-rod trav.mm : 4.00

Speed 1/min : 1130...1160

4th speed 1/min : 1250

C-rod trav.mm : 0.00...1.00

##### LOWEST RATED SPEED I

Control-lever

position degrees: 8...16

##### Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.70

Speed 1/min : 300

C-rod trav.mm : 6.00...6.40

C-rod trav.mm : 2.00

##### CONSTANT REGULATION

Speed 1/min : 320...420

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

##### 1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 12.50...12.60

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.80...10.00

2nd pressure hPa : 280

C-rod trav.mm : 11.80...11.90

3rd pressure hPa : 230

C-rod trav.mm : 10.70...11.00

##### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 700

Speed 1/min : 500

Del.quantity cm3/ : 211.0...217.0  
1000H.: (208.0...220.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 131.0...133.0

1000H.: (128.0...136.0)

# ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 11.50  
Speed 1/min : 1040...1050

## STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 180.0...200.0  
1000H.: (176.0...204.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 13,8 H1  
Edition : 07.12.87  
Superceeded : 13.5.87  
Calibrating oil : ISO-4113

Combination no. : 0 401 846 844

Injection pump  
Pump designation : PE6P120A72ORS3069  
EP type number : 0 411 826 712  
Governor  
Governor design. : RQ300/1000PA502-1  
Governor no. : 0 421 801 388

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8210.22.371

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>°</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1000

Contr.-rod trav.mm: 12.50...12.60

Del.quantity cm3/ : 20.5...20.7

100H.: (20.2...21.0)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 6.0...6.4

Del.quantity cm3/ : 1.7...2.3

100H.: (1.4...2.6)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Cont.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1000

Charge press. hPa : 700

Del.quantity cm3/ : 205.0...207.0

1000H.: (202.0...210.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 11.40

Speed 1/min : 1045...1060

2nd c-rod trav.mm : 4.00

Speed 1/min : 1135...1165

4th speed 1/min : 1250

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 300

Contr.-rod trav.mm: 6.2

#### Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.70

Speed 1/min : 300

C-rod trav.mm : 6.00...6.40

C-rod trav.mm : 2.00

Speed 1/min : 360...400

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1000

C-rod trav.mm : 13.00...13.10

2nd speed 1/min : 600

C-rod trav.mm : 13.00...13.20

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting

Speed 1/min : 500

Pressure hPa : 700

Contr.-rod trav.mm: 12.50...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.80...10.00

2nd pressure hPa : 280

C-rod trav.mm : 11.80...11.90

3rd pressure hPa : 220

C-rod trav.mm : 10.70...11.00

#### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 700

Speed 1/min : 500

Del.quantity cm3/ : 211.0...217.0

1000H.: (208.0...220.0)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : 131.0...133.0

1000H.: (128.0...136.0)

#### ROTATIONAL-SPEED LIMITATION

#### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.40

Speed 1/min : 1045...1060

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 180.0...200.0

1000H.: (176.0...204.0)

Remarks:

:  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,0 E 9  
Edition : 12.11.87  
Superceeded : 18.9.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 846 858  
  
Injection pump  
Pump designation : PE6P120A32OLS3810-10  
EP type number : 0 411 826 734  
Governor  
Governor design. : RQ300/1150PA511-4  
Governor no. : 0 421 801 341

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 6- 3- 5- 2- 4- 1

SD ang. spacing°CS: 0-45-120-165-240-285  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 10.40...10.50

Del.quantity cm3/ : 15.8...16.0

100H.: (15.5...16.3)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 300.0

Contr.-rod trav. m: 4.8...5.0

Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.3)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.10...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Charge press. hPa : 700

Del.quantity cm3/ : 158.0...160.0

1000H.: (155.0...163.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 19.9

### Testing:

1st c-rod trav.mm : 9.40  
Speed 1/min : 1195...1210  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1250...1280  
4th speed 1/min : 1360  
C-rod trav.mm : 0.00...1.50

### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 4.9

### Testing:

Speed 1/min : 200  
C-rod trav.mm min : 6.70  
Speed 1/min : 300  
C-rod trav.mm : 4.80...5.00  
C-rod trav.mm : 2.00  
Speed 1/min : 360...390

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : -  
Contr.-rod trav.mm: 10.00...10.20

### Measurement

Speed 1/min : 500  
1st pressure hPa : 340  
C-rod trav.mm : 10.20...10.30

### SWITCH-OVER POINT

Speed 1/min : 220 (240)

### FUEL-DELIVERY CHARACTERISTICS

#### 1st version

Charge press. hPa : 700  
Speed 1/min : 600  
Del.quantity cm3/ : 157.0...163.0  
1000H.: (154.0...166.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 139.0...142.0  
1000H.: (136.0...145.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

### ROTATIONAL-SPEED LIMITATION

L11

### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.40  
Speed 1/min : 1195...1210

### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

:

### APPLICATION

Omnibus

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet	:	ENA 11,9 C
Edition	:	20.11.87
Superceeded	:	18.9.87
Calibrating oil	:	ISO-4113
Combination no.	:	0 401 846 860
Injection pump		
Pump designation	:	PE6P120A32ORS3200
EP type number	:	0 411 826 766
Governor		
Governor design.	:	RQV250...1000PA808-1
Governer no.	:	0 421 813 660

Customer-spec. information  
Customer : ENASA

Engine : 96 R1 BX

1st version kW : 265.0  
Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values

START OF DELIVERY  
Test pressure, bar: 25...27

```
Prestroke mm      : 3.80...3.90
                  : (3.75...3.95)
Contr.-rod trav.mm: 9.00...12.00
Cam sequence      : 1- 5- 3- 6- 2- 4
```

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + -<sup>o</sup>: 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 600

Contr.-rod trav.mm: 12.00...12.10

Del.quantity cm3/ : 25.6...25.8

100H.: (25.3...26.1)

Dispersion      cm<sup>3</sup>/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 3.1...3.5

Del. quantity cm3/ : 1.7...2.3  
100H.: (1.4...2.6)

Dispersion cm<sup>3</sup>/ : 0.8  
100H.: (1.2)

(B) Setting of injection pump with externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250  
Sleeve travel mm: 1.00...1.40

2nd speed 1/min: 350  
Sleeve travel mm: 1.70...2.30

3rd speed 1/min: 700  
Sleeve travel mm: 4.70...5.30

4th speed 1/min: 1045  
Sleeve travel mm: 8.00...8.20

5th speed 1/min: 1135  
Sleeve travel mm: 9.10...9.40

### SLEEVE POSITION

Control-lever position  
Degree: -1

Speed 17/min: 1090  
Cont.-rod travelmm: 15.20...17.80

FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 600  
Charge press. hPa : 1200

Del.quantity cm3/ : 256.0...258.0  
1000H.: (253.0...261.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 42...50

Testing:  
1st c-rod trav.mm : 11.00  
Speed 1/min : 1050...1060  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1130...1160  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 5...13

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 4.80  
Speed 1/min : 250  
C-rod trav.mm : 3.10...3.50

#### CONSTANT REGULATION

Speed 1/min : 250...330

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1200  
Contr.-rod trav.mm: 12.00...12.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.50...8.90  
2nd pressure hPa : 710  
C-rod trav.mm : 11.30...11.40  
3rd pressure hPa : 440  
C-rod trav.mm : 9.50...9.70

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1200  
Speed 1/min : 900  
Del.quantity cm3/ : 249.0...255.0  
1000H.: (246.0...258.0)

Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 151.0...153.0  
1000H.: (148.0...156.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 11.00  
Speed 1/min : 1050...1060

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 230.0...260.0  
1000H.: (226.0...264.0)

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 3.10...3.50  
Del.quantity cm3/ : 17.0...23.0  
1000H.: (14.0...26.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
APPLICATION  
Special-purpose vehicle



Speed 1/min: 600  
Charge press. hPa : 700  
Del.quantity cm3/ : 190.0...192.0  
1000H.: (187.0...195.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 48...56  
Testing:  
1st c-rod trav.mm : 11.60  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1170...1200  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 14...22

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 6.90  
Speed 1/min : 300  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 390...430

#### TORQUE CONTROL

2nd speed 1/min : 1050  
C-rod trav.mm : 12.30...12.50  
3rd speed 1/min : 700  
C-rod trav.mm : 13.50...13.70

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 700  
Contr.-rod trav.mm: 13.10...13.30

#### Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
C-rod trav.mm : 11.10...11.30  
2nd pressure hPa : 550  
C-rod trav.mm : 12.70...12.90  
3rd pressure hPa : 780  
C-rod trav.mm : 13.20...13.30  
4th pressure hPa : 1100  
C-rod trav.mm : 13.45...13.55

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 1100  
Speed 1/min : 1050  
Del.quantity cm3/ : 184.0...187.0  
1000H.: (181.0...190.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1100  
Speed 1/min : 700  
Del.quantity cm3/ : 204.0...208.0  
1000H.: (201.0...211.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 129.0...131.0  
1000H.: (126.0...134.0)  
Dispersion cm3/ : 8.00  
1000H.: (-)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 11.60  
Speed 1/min : 1090...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 190.0...210.0  
1000H.: (186.0...214.0)

Remarks:

:



## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 C 3  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 848 790  
  
Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQ300/1050PA187-17  
Governor no. : 0 421 801 410

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 192.0  
Speed 1/min: 2100

### TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

### START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing<sup>o</sup>CS: 0-45-90-135-180-225-  
                          270-315  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 8

#### BASIC SETTING

1st speed 1/mi: 1050  
-----  
Contr.-rod trav.mm: 11.50...11.60  
-----  
Del.quantity cm3/ : 11.7...11.9  
-----  
                  100H.: (11.4...12.1)  
-----  
Dispersion cm3/ : 0.4  
-----  
                  100H.: (0.8)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 8.4...8.6  
Del.quantity cm3/ : 1.5...2.1  
                  100H.: (1.2...2.3)  
Dispersion cm3/ : 0.4  
                  100H.: (0.7)

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 600  
Contr.-rod travelmm: 13.20...14.20

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1050  
Del.quantity cm3/ : 117.0...119.0  
                  1000H.: (114.5...121.5)  
Dispersion cm3/ : 4.00  
                  1000H.: (8.00)

#### HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 600  
Contr.-rod trav.mm: 13.7

Testing:  
1st c-rod trav.mm : 10.50

Speed 1/min : 1095...1110  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1145...1175  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 8.5

#### Testing:

Speed 1/min : 200  
C-rod trav.mm min : 10.00  
Speed 1/min : 300  
C-rod trav.mm : 8.40...8.60  
C-rod trav.mm : 2.00  
Speed 1/min : 425...485

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 600  
Del.quantity cm3/ : 97.0...100.0  
                  1000H.: (94.0...103.0)  
Dispersion cm3/ : 8.00  
                  1000H.: (11.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.50

Speed 1/min : 1095...1110

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
                  1000H.: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 D 4  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 401 848 791  
Injection pump  
Pump designation : PE8P110A32OLS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQV300...1050PA829-3  
K  
Governer no. : 0 421 815 172

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
SD ang. spacing°CS: 270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 1050  
Contr.-rod trav.mm: 12.90...13.00  
Del.quantity cm3/ : 13.2...13.4  
100H.: (12.9...13.6)  
Dispersion cm3/ : 0.4  
100H.: (0.8)

2nd speed 1/min: 300.0  
Contr.-rod trav. m: 8.8...9.0  
Del.quantity cm3/ : 1.5...2.1  
100H.: (1.2...2.3)  
Dispersion cm3/ : 0.4  
100H.: (0.7)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
Sleeve travel mm: 1.10...1.30  
2nd speed 1/min: 500  
Sleeve travel mm: 3.70...4.00  
3rd speed 1/min: 800  
Sleeve travel mm: 5.80...6.10  
4th speed 1/min: 1090  
Sleeve travel mm: 8.10...8.50  
5th speed 1/min: 1170  
Sleeve travel mm: 9.50...10.00

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1050  
Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1050  
Del.quantity cm3/ : 132.0...134.0  
1000H.: (129.5...136.5)  
Dispersion cm3/ : 4.00  
1000H.: (8.00)

#### HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 1050  
Contr.-rod trav.mm: 16.5

Testing:  
1st c-rod trav.mm : 11.90  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1150...1180  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 8.9

Testing:  
Speed 1/min : 200  
C-rod trav.mm min : 10.50  
Speed 1/min : 300  
C-rod trav.mm : 8.80...9.00

#### CONSTANT REGULATION

Speed 1/min : 300...500

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1050  
C-rod trav.mm : 12.90...13.00  
2nd speed 1/min : 600  
C-rod trav.mm : 12.90...13.10  
3rd speed 1/min : 900  
C-rod trav.mm : 13.40...13.60

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 600  
Del.quantity cm3/ : 119.0...122.0  
1000H.: (116.0...125.0)  
Dispersion cm3/ : 6.00  
1000H.: (9.00)  
Speed 1/min : 900

Del.quantity cm3/ : 130.0...134.0  
1000H.: (127.0...137.0)  
Dispersion cm3/ : 6.00  
1000H.: (9.00)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 11.90  
Speed 1/min : 1090...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 C 5  
Edition : 20.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 848 794  
  
Injection pump  
Pump designation : PE8P110A320LS3842  
EP type number : 0 411 818 714  
Governor  
Governor design. : RQ300/1050PA187-18  
Governor no. : 0 421 801 133

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442

1st version kW : 213.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

START OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing<sup>o</sup>CS: 0-45-90-135-180-225-  
                          270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

#### BASIC SETTING

1st speed 1/mi: 750  
-----  
Contr.-rod trav.mm: 12.60...12.70  
-----  
Del.quantity cm3/ : 12.1...12.3  
-----  
                  100H.: (11.8...12.5)  
-----  
Dispersion cm3/ : 0.4  
-----  
                  100H.: (0.7)  
-----  
2nd speed 1/min: 300.0  
Contr.-rod trav. m: 8.6...8.8  
Del.quantity cm3/ : 1.5...2.1  
                  100H.: (1.2...2.3)  
Dispersion cm3/ : 0.4  
                  100H.: (0.7)

#### SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 650  
Contr.-rod travelmm: 13.00...14.00

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 750  
Del.quantity cm3/ : 121.0...123.0  
                  1000H.: (118.5...125.5)  
Dispersion cm3/ : 4.00  
                  1000H.: (7.50)

#### HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 650  
Contr.-rod trav.mm: 13.5

Testing:  
1st c-rod trav.mm : 11.60

Speed 1/min : 1095...1110  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1150...1180  
4th speed 1/min : 1350  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 6.9

#### Testing:

Speed 1/min : 200  
C-rod trav.mm min : 8.50  
Speed 1/min : 300  
C-rod trav.mm : 6.80...7.00  
C-rod trav.mm : 2.00  
Speed 1/min : 400...440

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 1050  
Del.quantity cm3/ : 131.0...135.0  
                  1000H.: (128.0...138.0)  
Dispersion cm3/ : 7.00  
                  1000H.: (10.0)

#### SETTING CONTROL-ROD STOP

Speed 1/min : 600

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than  
full-load trav.mm: 11.60  
Speed 1/min : 1095...1110

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
                  1000H.: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 18,3 E 6  
 Edition : 20.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 849 738  
 Injection pump  
 Pump designation : PE10P120A32DLS3824-10  
 EP type number : 0 411 829 701  
 Governor  
 Governor design. : RQV300...115DPA867  
 Governor no. : 0 421 813 630

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 423 LA

1st version kW : 386.0  
 Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 130...150

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 18,2 C  
 Edition : 20.11.87  
 Superceeded : 26.6.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 401 849 734  
 Injection pump  
 Pump designation : PE10P120A520/4LS3843  
 EP type number : 0 411 829 707  
 Governor  
 Governor design. : RQ300/1000PA837  
 Governor no. : 0 421 801 372

Cust. part no. : 2-7778

Customer-spec. information  
 Customer : MAN

Engine : D284OLF

1st version kW : 338.0  
 Speed 1/min: 2000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

L24

Test pressure, bar: 25...27

Prestroke mm : 3.90...4.00  
 : (3.85...4.05)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 10- 9- 4- 1- 8- 7  
 - 6- 3- 5- 2

SD ang. spacing°CS: 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 10

## BASIC SETTING

1st speed 1/mi: 1000  
 -----  
 Contr.-rod trav.mm: 11.30...11.40  
 -----  
 Del.quantity cm3/ : 20.1...20.3  
 -----  
 100H.: (19.8...20.6)  
 -----  
 Dispersion cm3/ : 0.5  
 -----  
 100H.: (0.9)  
 -----

2nd speed 1/min: 300.0  
 Contr.-rod trav. m: 6.0...6.2  
 Del.quantity cm3/ : 1.7...2.3  
 100H.: (1.4...2.6)  
 Dispersion cm3/ : 0.8  
 100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 600  
 Contr.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1000  
 Charge press. hPa : 1000  
 Del.quantity cm3/ : 201.0...203.0  
 1000H.: (198.0...206.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
 Setting point:  
 Speed 1/min : 600  
 Contr.-rod trav.mm: 20.0



Testing:  
1st c-rod trav.mm : 10.30  
Speed 1/min : 1045...1060  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1125...1155  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 6.1

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.60  
Speed 1/min : 300  
C-rod trav.mm : 6.00...6.20  
C-rod trav.mm : 2.00  
Speed 1/min : 365...405

TORQUE CONTROL  
Torque-control curve - 1st version  
1st speed 1/min : 1000  
C-rod trav.mm : 11.80...11.90  
2nd speed 1/min : 600  
C-rod trav.mm : 11.80...12.00

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 11.30...11.40

Measurement  
Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 10.10...10.20  
2nd pressure hPa : 530  
C-rod trav.mm : 10.40...10.50  
3rd pressure hPa : 650  
C-rod trav.mm : 10.90...11.10

#### SWITCH-OVER POINT

Speed 1/min : 220 (240)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : -  
Speed 1/min : 500

Del.quantity cm3/ : 144.0...146.0  
1000H.: (141.0...149.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 10.30  
Speed 1/min : 1045...1060

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 190.0...210.0  
1000H.: (186.0...214.0)

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 6.00...6.20  
Del.quantity cm3/ : 17.0...23.0  
1000H.: (14.0...26.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

Remarks: : MAN-NR. 2-7778

# START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 10- 9- 4- 1- 8- 7  
 : - 6- 3- 5- 2

SD ang. spacing<sup>o</sup>CS: 0-45-72-117-144-189-  
 216-261-288-333  
 Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 10

## BASIC SETTING

1st speed 1/mi: 1150  
 -----  
 Contr.-rod trav.mm: 12.00...12.10  
 -----  
 Del.quantity cm3/ : 18.6...18.8  
 -----  
 100H.: (18.3...19.1)  
 -----  
 Dispersion cm3/ : 0.5  
 -----  
 100H.: (0.8)  
 -----  
 2nd speed 1/min: 300.0  
 Contr.-rod trav. m: 5.0...5.2  
 Del.quantity cm3/ : 1.6...2.2  
 100H.: (1.3...2.5)  
 Dispersion cm3/ : 0.8  
 100H.: (1.2)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
 Sleeve travel mm: 1.40...1.60  
 2nd speed 1/min: 550  
 Sleeve travel mm: 5.00...5.20  
 3rd speed 1/min: 900  
 Sleeve travel mm: 6.40...6.60  
 4th speed 1/min: 1200  
 Sleeve travel mm: 8.60...8.80  
 5th speed 1/min: 1250  
 Sleeve travel mm: 9.60...10.00

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1185  
 Contr.-rod travelmm: 15.20...17.80

# FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1150  
 Charge press. hPa : 700  
 Del.quantity cm3/ : 186.0...188.0  
 1000H.: (183.0...191.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (8.00)

## HIGHEST RATED SPEED

1st version  
 Control-lever  
 position degrees: 51...59

Testing:  
 1st c-rod trav.mm : 11.00  
 Speed 1/min : 1190...1200  
 2nd c-rod trav.mm : 4.00  
 Speed 1/min : 1235...1265  
 4th speed 1/min : 1350  
 C-rod trav.mm : 0.00...1.50

## LOWEST RATED SPEED I

Control-lever  
 position degrees: 15...23

Testing:  
 Speed 1/min : 100  
 C-rod trav.mm min : 6.50  
 Speed 1/min : 300  
 C-rod trav.mm : 5.00...5.20

## CONSTANT REGULATION

Speed 1/min : 300...400

Adjustment test, manifold-pressure  
 compensator (LDA,ADA,ALDA)

## 1st version

Setting  
 Speed 1/min : 500  
 Pressure hPa : -  
 Contr.-rod trav.mm: 10.30...10.60

## Measurement

Speed 1/min : 500  
 1st pressure hPa : 390  
 C-rod trav.mm : 10.70...10.90

## SWITCH-OVER POINT

Speed 1/min : 220 (240)

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 700  
Speed 1/min : 750  
Del. quantity cm3/ : 193.0...196.0  
1000H.: (190.0...199.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del. quantity cm3/ : 146.0...148.0  
1000H.: (143.0...151.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 11.00  
Speed 1/min : 1190...1200

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del. quantity cm3/ : 160.0...180.0  
1000H.: (156.0...184.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEN 7,1 A 2  
 Edition : 20.11.87  
 Superseded : -  
 Calibrating oil : ISO-4113  
 Combination no. : O 401 876 320  
 Injection pump  
 Pump designation : PE6P110A32ORS492  
 EP type number : O 411 816 161  
 Governor  
 Governor design. : RSV200...1100P1A305-  
 2  
 Governor no. : O 421 833 202  
 Customer-spec. information  
 Customer : VOLVO-PENTA  
 Engine : TJD71AP

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Calibrating nozzle-holder  
 assembly : O 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test inj. tubing : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100H.: (9.5...10.3)

Dispersion cm<sup>3</sup>/ : 0.4

100H.: (0.7)

2nd speed 1/min: 200.0

Contr.-rod trav. m: 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

Dispersion cm<sup>3</sup>/ : 0.3

100H.: (0.6)

#### SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : 4.25

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm<sup>3</sup>/ : 98.0...100.0

1000H.: (95.0...103.0)

Dispersion cm<sup>3</sup>/ : 4.00

1000H.: (7.50)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 50...58

Testing:

1st c-rod trav.mm : 10.00

Speed 1/min : 1110...1120

2nd c-rod trav.mm : 4.00

Speed 1/min : 1140...1170

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

M02

Control-lever

position degrees: 13...21

Setting point w/out aux. spring

Speed 1/min : 200

Contr.-rod trav.mm: 5.0

Speed 1/min : 200

C-rod trav.mm : 5.40...5.60

C-rod trav.mm : 2.00

Speed 1/min : 280...340

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.00

Speed 1/min : 1110...1120

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,0 Q 4  
Edition : 07.12.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113

Combination no. : 0 401 876 740

Injection pump  
Pump designation : PE6P120A320LS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-4  
Governor no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 3- 5- 2- 4- 1

SD ang. spacing<sup>0</sup>CS: 0-45-120-165-240-285  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 1180

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 16.3...16.5  
100H.: (16.0...16.8)

Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 750.0  
Contr.-rod trav. m: 3.3...3.5  
Del.quantity cm3/ : 1.8...2.4  
100H.: (1.5...2.7)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1180  
Del.quantity cm3/ : 163.0...165.0  
1000H.: (160.0...168.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 56...64

Testing:  
1st c-rod trav.mm : 10.00

Speed 1/min : 1210...1220  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1235...1255  
4th speed 1/min : 1350  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 32...40  
Setting point w/out aux. spring  
Speed 1/min : 750  
Contr.-rod trav.mm: 3.4  
Speed 1/min : 750  
C-rod trav.mm : 3.30...3.50  
C-rod trav.mm : 2.00  
Speed 1/min : 755...815

#### SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1180  
C-rod trav.mm : 11.00...11.10  
2nd speed 1/min : 975  
C-rod trav.mm : 11.60...11.80  
3rd speed 1/min : 600  
C-rod trav.mm : 11.80...12.00

#### SWITCH-OVER POINT

Speed 1/min : 5 (0)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 975  
Del.quantity cm3/ : 174.0...180.0  
1000H.: (171.0...183.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 10.00  
Speed 1/min : 1210...1220

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

M04

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

#### APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 11,0 Q 8  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 401 876 740A  
Injection pump  
Pump designation : PE6P120A32OLS3815-10  
EP type number : 0 411 826 735  
Governor  
Governor design. : RSV750...1150P1A820-4  
Governor no. : 0 421 833 179

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 3- 5- 2- 4- 1

SD ang. spacing°CS: 0-45-120-165-240-285  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 1180

Contr.-rod trav.mm: 10.40...10.50

Del.quantity cm3/ : 15.3...15.5

100H.: (15.0...15.8)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 750.0

Contr.-rod trav. m: 3.3...3.5

Del.quantity cm3/ : 1.8...2.4

100H.: (1.5...2.7)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1180

Del.quantity cm3/ : 153.0...155.0

1000H.: (150.0...158.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...64



#### Testing:

1st c-rod trav.mm : 9.40  
Speed 1/min : 1210...1220  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1235...1255  
4th speed 1/min : 1350  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 32...40  
Setting point w/out aux. spring  
Speed 1/min : 750  
Contr.-rod trav.mm: 3.4  
Speed 1/min : 750  
C-rod trav.mm : 3.30...3.50  
C-rod trav.mm : 2.00  
Speed 1/min : 755...815

#### SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1180  
C-rod trav.mm : 10.40...10.50  
2nd speed 1/min : 975  
C-rod trav.mm : 11.00...11.20  
3rd speed 1/min : 600  
C-rod trav.mm : 11.30...11.50

#### SWITCH-OVER POINT

Speed 1/min : 5 (0)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 975  
Del.quantity cm3/ : 164.0...168.0  
1000H.: (161.0...171.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.40  
Speed 1/min : 1210...1220

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,6 P 1  
Edition : 07.12.87  
Superceeded : 21.8.87  
Calibrating oil : ISO-4113

Combination no. : 0 401 878 703

Injection pump  
Pump designation : PE8P120A32OLS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RSV650...1150POA823  
Governor no. : 0 421 833 166

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
                                  270-315

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 1180

Contr.-rod trav.mm: 9.30...9.40

Del.quantity cm3/ : 13.7...13.9

100H.: (13.4...14.2)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 650.0

Contr.-rod trav. m: 3.4...3.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1180

Del.quantity cm3/ : 137.0...139.0

1000H.: (134.0...142.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 42...50

Testing:  
1st c-rod trav.mm : 8.30  
Speed 1/min : 1210...1220  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1235...1255  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 20...28  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 3.6  
Speed 1/min : 650  
C-rod trav.mm : 3.50...3.70  
C-rod trav.mm : 2.00  
Speed 1/min : 655...695

#### SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1180  
C-rod trav.mm : 9.30...9.40  
2nd speed 1/min : 975  
C-rod trav.mm : 10.10...10.20  
3rd speed 1/min : 1075  
C-rod trav.mm : 9.60...9.80  
4th speed 1/min : 700  
C-rod trav.mm : 10.10...10.30

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 950  
Del.quantity cm3/ : 154.0...158.0  
1000H.: (151.0...161.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.30  
Speed 1/min : 1210...1220

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,6 P 6  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 401 878 703A  
  
Injection pump  
Pump designation : PE8P120A32OLS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RSV650...1150POA823  
Governor no. : 0 421 833 166

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

# START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
                                  270-315

Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 1180

Contr.-rod trav.mm: 9.00...9.10

Del.quantity cm3/ : 13.3...13.5

100H.: (13.0...13.8)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 650.0

Contr.-rod trav. m: 3.4...3.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.8

100H.: (1.2)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1180

Del.quantity cm3/ : 133.0...135.0

1000H.: (130.0...138.0)

Dispersion cm3/ : 5.00

1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 42...50

Testing:

1st c-rod trav.mm : 8.00  
Speed 1/min : 1210...1220  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1235...1255  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I

Control-lever  
position degrees: 20...28  
Setting point w/out aux. spring  
Speed 1/min : 650  
Contr.-rod trav.mm: 3.6  
Speed 1/min : 650  
C-rod trav.mm : 3.50...3.70  
C-rod trav.mm : 2.00  
Speed 1/min : 655...695

SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1180  
C-rod trav.mm : 9.00...9.10  
2nd speed 1/min : 975  
C-rod trav.mm : 9.80...10.00  
3rd speed 1/min : 1075  
C-rod trav.mm : 9.30...9.50  
4th speed 1/min : 700  
C-rod trav.mm : 9.80...10.00

FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 950  
Del.quantity cm3/ : 145.0...149.0  
1000H.: (142.0...152.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.00  
Speed 1/min : 1210...1220

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...160.0  
1000H.: (136.0...164.0)

Remarks:

:

When adjusting and checking, adjust  
speed regulation to 1210...1220 l/min.  
Afterwards, readjust speed regulation  
to 1160...1170 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9A19  
Edition : 07.12.87  
Superceeded : 12.9.86  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 036 058  
  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
2  
EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA684-1  
Governor no. : 0 421 801 344

Cust. part no. : 2-7756

Customer-spec. information  
Customer : MAN

Engine : D2866LF

1st version kW : 243.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 6

## BASIC SETTING

1st speed 1/mi: 750

Contr.-rod trav.mm: 11.10...11.20

Del.quantity cm3/ : 20.2...20.4  
100H.: (19.9...20.7)

Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 300.0  
Contr.-rod trav. m: 4.7...4.9  
Del.quantity cm3/ : 1.2...1.8  
100H.: (0.9...2.1)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed 1/min: 600  
Contr.-rod travelmm: 19.20...20.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 750  
Charge press. hPa : 1000  
Del.quantity cm3/ : 202.0...204.0  
1000H.: (199.0...207.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Setting point:  
Speed 1/min : 600  
Contr.-rod trav.mm: 20.0

### Testing:

1st c-rod trav.mm : 9.50  
Speed 1/min : 1145...1160  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1185...1215  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.00

### LOWEST RATED SPEED I

Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 4.8

### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.30  
Speed 1/min : 300  
C-rod trav.mm : 4.70...4.90  
C-rod trav.mm : 2.00  
Speed 1/min : 340...380

### TORQUE CONTROL

Dimension a mm : 0.50  
Torque-control curve - 1st version  
1st speed 1/min : 750  
C-rod trav.mm : 11.90...12.20  
2nd speed 1/min : 1100  
C-rod trav.mm : 10.60...10.80  
3rd speed 1/min : 875  
C-rod trav.mm : 11.80...12.00  
4th speed 1/min : 950  
C-rod trav.mm : 11.20...11.50

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting  
Speed 1/min : 500  
Pressure hPa : 1000  
Contr.-rod trav.mm: 11.10...11.20

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 8.90...9.10  
2nd pressure hPa : 85  
C-rod trav.mm : 9.30...9.40  
3rd pressure hPa : 280  
C-rod trav.mm : 10.50...10.90

### SWITCH-OVER POINT

Speed 1/min : 220 (240)

### FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : 1000  
Speed 1/min : 1100  
Del.quantity cm3/ : 203.0...207.0  
1000H.: (200.0...210.0)  
Charge press. hPa : 1000  
Speed 1/min : 650  
Del.quantity cm3/ : 198.0...204.0  
1000H.: (195.0...207.0)  
Charge press. hPa : 280  
Speed 1/min : 500  
Del.quantity cm3/ : 184.0...196.0  
1000H.: (181.0...199.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 132.0...134.0  
1000H.: (129.0...137.0)

### ROTATIONAL-SPEED LIMITATION

### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.50  
Speed 1/min : 1145...1160

### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 225.0...245.0  
1000H.: (221.0...249.0)

### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 4.70...4.90  
Del.quantity cm3/ : 12.0...18.0  
1000H.: (9.0...21.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.00)

### Remarks:

: MAN-NR. 2-7756

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 11,9 G6  
Edition : 07.12.87  
Superseded : 18.8.87  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 036 064  
  
Injection pump  
Pump designation : PES6P110A720/3LS477-  
2  
EP type number : 0 412 016 071  
Governor  
Governor design. : RQ250/1100PA817-1  
Governor no. : 0 421 801 362

Customer-spec. information  
Customer : MAN

Engine : D2866UH/200

1st version kW : 150.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)



Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 6- 2- 4- 1- 5- 3

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - <sup>o</sup> : 0.50 (0.75)

SD mark cyl. no. : 6

#### BASIC SETTING

1st speed 1/mi: 800

Contr.-rod trav.mm: 10.50...10.60

Del.quantity cm3/ : 9.1...9.4

100H.: (8.8...9.6)

Dispersion cm3/ : 0.4

100H.: (0.7)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 6.1...6.3

Del.quantity cm3/ : 1.5...2.0

100H.: (1.2...2.2)

Dispersion cm3/ : 0.4

100H.: (0.7)

#### SLEEVE POSITION

Control-lever position

Degree: -2

Speed 1/min: 600

Contr.-rod travelmm: 19.20...20.80

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 800

Del.quantity cm3/ : 91.0...94.0

1000H.: (88.5...96.5)

Dispersion cm3/ : 4.00

1000H.: (7.50)

#### HIGHEST RATED SPEED

1st version

Setting point:

Speed 1/min : 600

Contr.-rod trav.mm: 20.0

Testing:

1st c-rod trav.mm : 9.50

Speed 1/min : 1145...1160

2nd c-rod trav.mm : 4.00

Speed 1/min : 1215...1245

4th speed 1/min : 1300

C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Setting point w/out aux. spring

Speed 1/min : 250

Contr.-rod trav.mm: 6.2

Testing:

Speed 1/min : 100

C-rod trav.mm min : 7.70

Speed 1/min : 250

C-rod trav.mm : 6.10...6.30

C-rod trav.mm : 2.00

Speed 1/min : 330...370

#### TORQUE CONTROL

Dimension a mm : -

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 10.50...10.60

2nd speed 1/min : 500

C-rod trav.mm : 10.50...10.70

#### SWITCH-OVER POINT

Speed 1/min : 170 (190)

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 1100

Del.quantity cm3/ : 101.0...109.0

1000H.: (98.0...112.0)

Speed 1/min : 500

Del.quantity cm3/ : 77.0...85.0

1000H.: (74.0...88.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 9.50

Speed 1/min : 1145...1160

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 110.0...130.0

1000H.: (106.0...134.0)

#### LOW IDLE

Speed 1/min : 250

Contr.-rod trav.mm: 6.10...6.30

Del.quantity cm3/ : 15.0...20.0

1000H.: (12.5...22.5)

Dispersion    cm3/ : 4.50  
                 1000H.: (7.50)

Remarks:

:

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ALO 13,8 B1  
Edition : 9.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 046 159  
Injection pump  
Pump designation : PES6P120A320RS354  
Governor  
Governor design. : RQV300...950PA362KR

Customer-spec. information  
Customer : ALLIS-CHALMERS

Engine : 16.000-25.000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 443 022

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 060

Outside diameter  
x Wall thickness  
x Length mm : 8,00X2,00X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Contr.-rod trav.mm: 9.60  
Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 950  
Contr.-rod trav.mm: 9.60  
Del.quantity cm3/ : 20.4...20.6  
100H.: (20.2...20.8)  
Dispersion cm3/ : 0.4  
100H.: (-)  
2nd speed 1/min: 300  
Contr.-rod trav. m: 4.80  
Del.quantity cm3/ : 1.8...2.3  
100H.: (-)

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 950  
Cont.-rod travelmm: 15.20...17.50

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 950  
Del.quantity cm3/ : 204.0...206.0  
1000H.: (202.0...208.0)  
Dispersion cm3/ : 4.0  
1000H.: (-)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 62...70

Testing:  
1st c-rod trav.mm : 16.35  
Speed 1/min : 950  
2nd c-rod trav.mm : 15.05  
Speed 1/min : 1000  
3rd c-rod trav.mm : 4.50...9.50  
Speed 1/min : 1100  
4th speed 1/min : 1150  
C-rod trav.mm : 0...6.60  
5th speed 1/min : 1250  
C-rod trav.mm : 0...0.01

## LOWEST RATED SPEED I

Control-lever  
position degrees: 8...16

Testing:

Speed 1/min : 200  
C-rod trav.mm min : 8.00  
Speed 1/min : 270  
C-rod trav.mm : 5.80...8.00  
C-rod trav.mm : 4.10  
Speed 1/min : 350  
Speed 1/min : 380  
C-rod trav.mm max : 3.15  
Speed 1/min : 400  
C-rod trav.mm : 3.00  
C-rod trav.mm : -  
Speed 1/min : 550

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 750  
Del.quantity cm3/ : 194.5...197.5  
1000H.: (193.0...199.0)  
Dispersion cm3/ : -  
1000H.: (-)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.60  
Speed 1/min : 990...1000

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 130.0...170.0  
1000H.: (-)

#### LOW IDLE

Speed 1/min : 300  
Del.quantity cm3/ : 17.0...24.0  
1000H.: (-)

Remarks:

: ALLIS-CHALMERS NO.  
: 4 395 448

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : RVI 8,8 B 2  
 Edition : 12.11.87  
 Superceeded : 18.8.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 046 247  
 Injection pump  
 Pump designation : PES6P120A32ORS417  
 EP type number : 0 412 026 036  
 Governor  
 Governor design. : RQV300...1150PAS27-1  
 K  
 Governor no. : 0 421 815 165

Customer-spec. information  
 Customer : RVI

Engine : MIDR 062030

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

## START OF DELIVERY DIFFERENCE

betw.c-rod trav.mm: 10.00...11.00  
 & c-rod trav max. : 21.00

## BASIC SETTING

1st speed 1/mi: 1150  
 -----  
 Contr.-rod trav.mm: 8.50...8.60  
 -----  
 Del.quantity cm3/ : 14.4...14.6  
 -----  
 100H.: (14.1...14.9)  
 -----  
 Dispersion cm3/ : 0.5  
 -----  
 100H.: (0.9)  
 -----  
 2nd speed 1/min: 600.0  
 Contr.-rod trav. m: 5.2...5.4  
 Del.quantity cm3/ : 1.8...2.4  
 100H.: (1.5...2.7)  
 Dispersion cm3/ : 0.8  
 100H.: (1.2)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300  
 Sleeve travel mm: 1.70...2.10  
 2nd speed 1/min: 900  
 Sleeve travel mm: 5.80...6.20  
 3rd speed 1/min: 1150  
 Sleeve travel mm: 8.00...8.20

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 1190  
 Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 1150  
 Del.quantity cm3/ : 144.0...146.0  
 1000H.: (141.0...149.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 56...6418

Testing:

1st c-rod trav.mm : 7.50

Speed 1/min : 1205...1215

2nd c-rod trav.mm : 4.00

Speed 1/min : 1260...1290

4th speed 1/min : 1450

C-rod trav.mm : 0.00...1.00

## LOWEST RATED SPEED I

Control-lever

position degrees: 62...70

Testing:

Speed 1/min : 100

C-rod trav.mm min : 6.30

Speed 1/min : 300

C-rod trav.mm : 3.30...3.50

## CONSTANT REGULATION

Speed 1/min : 320...440

## TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1150

C-rod trav.mm : 8.50...8.60

2nd speed 1/min : 750

C-rod trav.mm : 7.60...7.70

3rd speed 1/min : 500

C-rod trav.mm : 7.00...7.20

4th speed 1/min : 350

C-rod trav.mm : 7.00...7.20

## SWITCH-OVER POINT

Speed 1/min : 220 (240)

## FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 750

Del.quantity cm3/ : 122.0...128.0

1000H.: (119.0...131.0)

Speed 1/min : 500

Del.quantity cm3/ : 69.0...75.0

1000H.: (66.0...78.0)

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 7.50

Speed 1/min : 1205...1215

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 140.0...160.0

1000H.: (136.0...164.0)

## LOW IDLE

Speed 1/min : 300

Contr.-rod trav.mm: 3.30...3.50

Del.quantity cm3/ : 18.0...24.0

1000H.: (15.0...27.0)

Dispersion cm3/ : 8.00

1000H.: (12.00)

Remarks:

:

Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : KHD 9,6 B 1  
 Edition : 6.12.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 076 714  
 Injection pump  
 Pump designation : PES6P110A72ORS3079  
 EP type number : 0 412 016 711  
 Governor  
 Governor design. : RSV300...1150P1A486-1  
 Governor no. : 0 421 833 210

Customer-spec. information  
 Customer : KHD

Engine : BF6L413FRC

1st version kW : 199.0  
 Speed 1/min: 2300

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

M20

Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1-5-3-6-2-4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1150

Contr.-rod trav.mm: 13.70...13.80

Del.quantity cm3/ : 16.0...16.4

100H.: (15.7...16.7)

Dispersion cm3/ : 0.4

100H.: (0.75)

2nd speed 1/min: 300

Contr.-rod trav. m: 7.50...7.70

Del.quantity cm3/ : 1.6...2.2

100H.: (-)

Dispersion cm3/ : 0.4

100H.: (0.7)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

Governor-spring reload

Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1150

Charge press. hPa : 1200

Del.quantity cm3/ : 160.0...164.0

1000H.: (157.0...167.0)

Dispersion cm3/ : 4.0

1000H.: (7.5)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 48...56

Testing:

1st c-rod trav.mm : 12.70

Speed 1/min : 1190...1200

2nd c-rod trav.mm : 4.00

Speed 1/min : 1220...1250  
4th speed 1/min : 1390  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 9...17  
Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 7.60  
Speed 1/min : 300  
C-rod trav.mm : 7.50...7.70  
C-rod trav.mm : 2.00  
Speed 1/min : 310...370

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

Setting  
Speed 1/min : 550  
Pressure hPa : 1200  
Contr.-rod trav.mm: 13.70...13.80

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
C-rod trav.mm : 12.30...12.40  
2nd pressure hPa : 550  
C-rod trav.mm : 13.40...13.50  
3rd pressure hPa : 400  
C-rod trav.mm : 12.60...12.80

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1200  
Speed 1/min : 800  
Del.quantity cm3/ : 158.0...162.0  
1000H.: (155.0...165.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 123.0...125.0  
1000H.: (120.0...128.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 12.70  
Speed 1/min : 1190...1200

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 170.0...190.0  
1000H.: (-)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEN 16,2 A  
 Edition : 20.11.87  
 Superceeded : 5.6.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 646 850  
 Injection pump  
 Pump designation : PE6P130A72ORS7140  
 EP type number : 0 412 636 807  
 Governor  
 Governor design. : RQV250...900PA869  
 Governor no. : 0 421 813 634

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TID 162 AP

1st version kW : 357.0  
 Speed 1/min: 1800

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700

Contr.-rod trav.mm: 10.20...10.30

Del.quantity cm3/ : 29.2...29.4

100H.: (28.8...29.8)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 250.0

Contr.-rod trav. m: 3.7...3.9

Del.quantity cm3/ : 1.7...2.2

100H.: (1.7...2.2)

Dispersion cm3/ : 0.5

100H.: (0.7)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250

Sleeve travel mm: 0.90...1.30

2nd speed 1/min: 350

Sleeve travel mm: 2.00...2.60

3rd speed 1/min: 700

Sleeve travel mm: 4.40...5.00

4th speed 1/min: 925

Sleeve travel mm: 7.30...7.50

5th speed 1/min: 985

Sleeve travel mm: 8.10...8.50

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 980

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 700

Del.quantity cm3/ : 292.0...294.0

1000H.: (288.0...298.0)

Dispersion cm<sup>3</sup>/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 55...63

Testing:  
1st c-rod trav.mm : 9.20  
Speed 1/min : 920...925  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 970...1000  
4th speed 1/min : 1100  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 6...14

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 5.30  
Speed 1/min : 250  
C-rod trav.mm : 3.70...3.90

#### CONSTANT REGULATION

Speed 1/min : 250...360

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 9.20  
Speed 1/min : 920...925

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...260.0

#### LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 3.70...3.90  
Del.quantity cm<sup>3</sup>/ : 17.0...22.0  
1000H.: (17.0...22.0)  
Dispersion cm<sup>3</sup>/ : 5.00  
1000H.: (7.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEN 16,2 B  
 Edition : 20.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 646 857  
 Injection pump  
 Pump designation : PE6P130A720RS7150  
 EP type number : 0 412 636 808  
 Governor  
 Governor design. : RQV250...900PA881  
 Governor no. : 0 421 813 676

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TAMD 162 (HD)

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700  
 -----  
 Contr.-rod trav.mm: 10.20...10.30  
 -----  
 Del.quantity cm3/ : 29.2...29.4  
 -----  
 100H.: (28.8...29.8)  
 -----  
 Dispersion cm3/ : 0.5  
 -----  
 100H.: (0.9)  
 -----

2nd speed 1/min: 250.0  
 Contr.-rod trav. m: 3.7...3.9  
 Del.quantity cm3/ : 1.7...2.2  
 100H.: (1.4...2.4)  
 Dispersion cm3/ : 0.5  
 100H.: (0.7)

(B) Setting of injection pump with  
 externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 250  
 Sleeve travel mm: 0.90...1.30  
 2nd speed 1/min: 350  
 Sleeve travel mm: 2.00...2.60  
 3rd speed 1/min: 700  
 Sleeve travel mm: 4.40...5.00  
 4th speed 1/min: 925  
 Sleeve travel mm: 7.30...7.50  
 5th speed 1/min: 985  
 Sleeve travel mm: 8.10...8.50

## SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed 1/min: 980  
 Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 700  
 Charge press. hPa : 900  
 Del.quantity cm3/ : 292.0...294.0  
 1000H.: (288.0...298.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 55...63

Testing:  
1st c-rod trav.mm : 9.20  
Speed 1/min : 920...925  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 970...1000  
4th speed 1/min : 1100  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 63...71

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 5.30  
Speed 1/min : 250  
C-rod trav.mm : 3.70...3.90

CONSTANT REGULATION  
Speed 1/min : 250...360

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 7.60...7.80  
2nd pressure hPa : 740  
C-rod trav.mm : 10.00...10.10  
3rd pressure hPa : 300  
C-rod trav.mm : 7.90...8.10

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : -  
Speed 1/min : 700  
Del.quantity cm3/ : 192.5...195.5  
1000H.: (189.0...199.0)

## ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 9.20  
Speed 1/min : 920...925

## LOW IDLE

Speed 1/min : 250  
Contr.-rod trav.mm: 3.70...3.90  
Del.quantity cm3/ : 17.0...22.0  
1000H.: (14.5...24.5)  
Dispersion cm3/ : 5.00  
1000H.: (7.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SCA 14,2 I  
Edition : 20.11.87  
Superceeded : 28.10.86  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 648 827  
  
Injection pump  
Pump designation : PE8P120A920/4LS7016  
EP type number : 0 412 628 814  
Governor  
Governor design. : RQV200...950PA547-7  
Governor no. : 0 421 813 550

Customer-spec. information  
Customer : SCANIA

Engine : DSC14 06

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 2- 7- 3- 4- 5-  
                  6- 8

SD ang. spacing°CS: 0-45-90-135-180-225-  
                                  270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 700  
-----  
Contr.-rod trav.mm: 12.60...12.70  
-----  
Del.quantity cm3/ : 19.0...19.2  
-----  
100H.: (18.7...19.5)  
-----  
Dispersion cm3/ : 0.6  
-----  
100H.: (0.9)  
-----

2nd speed 1/min: 225.0  
Contr.-rod trav. m: 4.9...5.1  
Del.quantity cm3/ : 1.6...2.0  
100H.: (-)  
Dispersion cm3/ : 0.3  
100H.: (0.6)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 225  
Sleeve travel mm: 1.30...1.40  
2nd speed 1/min: 330  
Sleeve travel mm: 2.40...2.70  
3rd speed 1/min: 420  
Sleeve travel mm: 3.10...3.40  
4th speed 1/min: 1000  
Sleeve travel mm: 7.80...8.00  
5th speed 1/min: 1100  
Sleeve travel mm: 9.10...9.40

## SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed 1/min: 1040  
Cont.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 700  
Charge press. hPa : 900  
Del.quantity cm3/ : 190.0...192.0  
1000H.: (187.0...195.0)

Dispersion cm<sup>3</sup>/ : 6.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 56...64

#### Testing:

1st c-rod trav.mm : 11.60  
Speed 1/min : 990...1000  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1090...1120  
4th speed 1/min : 1250  
C-rod trav.mm : 0.00...1.00

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 6...14

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 6.40  
Speed 1/min : 225  
C-rod trav.mm : 4.90...5.10  
C-rod trav.mm : 2.00  
Speed 1/min : 370...430

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

#### 1st version

##### Setting

Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 12.60...12.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
C-rod trav.mm : 11.20...11.30  
2nd pressure hPa : 215  
C-rod trav.mm : 11.90...12.10

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 900  
Speed 1/min : 950  
Del.quantity cm<sup>3</sup>/ : 184.0...192.0  
1000H.: (182.0...194.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm<sup>3</sup>/ : 158.0...162.0  
1000H.: (156.0...164.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 11.60  
Speed 1/min : 990...1000

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...290.0  
Contr.-rod trav.mm: 20.00...21.00

#### LOW IDLE

Speed 1/min : 225  
Contr.-rod trav.mm: 4.90...5.10  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
Dispersion cm<sup>3</sup>/ : 3.00  
1000H.: (6.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without R0B0 diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on 1986-09-16

Start of delivery - engine: 17° before  
TDC  
Engine firing sequence: 1-5-4-2-6-3-7-8

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 A 9  
Edition : 20.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 648 842  
  
Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350..950PA866-2  
Governor no. : 0 421 813 673

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 275.0  
Speed 1/min: 1900

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Contr.-rod trav.mm: 20.00...21.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
                                  270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 950

Contr.-rod trav.mm: 15.30...15.40

Del.quantity cm3/ : 20.9...21.1

100H.: (20.6...21.4)

Dispersion cm3/ : 0.5

100H.: (0.9)

2nd speed 1/min: 350.0

Contr.-rod trav. m: 6.2...6.6

Del.quantity cm3/ : 1.6...2.2

100H.: (1.3...2.5)

Dispersion cm3/ : 0.6

100H.: (1.0)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 300

Sleeve travel mm: 0.60...0.80

2nd speed 1/min: 425

Sleeve travel mm: 2.40...2.60

3rd speed 1/min: 800

Sleeve travel mm: 5.30...5.60

4th speed 1/min: 1000

Sleeve travel mm: 7.80...8.20

5th speed 1/min: 1120

Sleeve travel mm: 9.50...10.00

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: ?

Cont.-rod travelmm: 16.50...18.00

FULL-LOAD DELIV. AT FULL-LOAD STOP



1st version  
Speed 1/min: 950  
Charge press. hPa : 950  
Del. quantity cm3/ : 209.0...211.0  
1000H.: (206.0...214.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

#### HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 60...68

Testing:  
1st c-rod trav.mm : 14.40  
Speed 1/min : 990...1000  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1090...1120  
4th speed 1/min : 1300  
C-rod trav.mm : 0.00...1.50

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 8...16

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 7.90  
Speed 1/min : 350  
C-rod trav.mm : 6.20...6.40

#### CONSTANT REGULATION

Speed 1/min : 300...500

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 950  
C-rod trav.mm : 15.30...15.40  
2nd speed 1/min : 800  
C-rod trav.mm : 16.40...16.60  
3rd speed 1/min : 900  
C-rod trav.mm : 15.90...16.10

Adjustment test, manifold-pressure  
compensator (LDA, ADA, ALDA)

#### 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : -  
Contr.-rod trav.mm: 10.90...11.30

#### Measurement

Speed 1/min : 600  
1st pressure hPa : 450  
C-rod trav.mm : 11.70...11.90

NO2

2nd pressure hPa : 700  
C-rod trav.mm : 13.80...14.00

#### SWITCH-OVER POINT

Speed 1/min : 270 (290)

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Charge press. hPa : 950  
Speed 1/min : 800  
Del. quantity cm3/ : 233.0...237.0  
1000H.: (230.0...240.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del. quantity cm3/ : 143.0...145.0  
1000H.: (140.0...148.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than  
full-load trav.mm: 14.40  
Speed 1/min : 990...1000

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del. quantity cm3/ : 190.0...210.0  
1000H.: (186.0...214.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 21,9 Y 2  
 Edition : 12.11.87  
 Superceeded : -  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 670 805  
 Injection pump  
 Pump designation : PE12P120A320LS7807-2  
 EP type number : 0 412 620 812  
 Governor  
 Governor design. : RSV375..1050POA535-1  
 Governor no. : 0 421 833 282

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 491.0  
 Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 12- 1- 5- 9- 8- 3-  
                  4- 11- 10- 2- 6- 7

SD ang. spacing<sup>o</sup>CS: 0-45-60-105-120-165-  
                          180-225-240-285-300-  
                          345  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 12

## BASIC SETTING

1st speed 1/mi: 650  
-----  
Contr.-rod trav.mm: 14.70...14.90  
-----  
Del.quantity cm3/ : 21.6...21.9  
                  100H.: (21.3...22.2)  
-----  
Dispersion cm3/ : 0.5  
                  100H.: (0.9)  
-----  
2nd speed 1/min: 375.0  
Contr.-rod trav. m: 5.6...5.8  
Del.quantity cm3/ : 1.6...2.2  
                  100H.: (1.3...2.5)  
Dispersion cm3/ : 0.8  
                  100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 650  
Charge press. hPa : 800  
Del.quantity cm3/ : 216.0...219.0  
                  1000H.: (213.0...222.0)  
Dispersion cm3/ : 5.00  
                  1000H.: (9.00)

## HIGHEST RATED SPEED

## 1st version

Control-lever  
position degrees: 36...44

## Testing:

1st c-rod trav.mm : 13.50  
Speed 1/min : 1070...1080  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1130...1160  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.40

## LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21  
Setting point w/out aux. spring  
Speed 1/min : 375  
Contr.-rod trav.mm: 5.7

## Testing:

Speed 1/min : 100  
C-rod trav.mm min : 9.50  
Speed 1/min : 375  
C-rod trav.mm : 5.60...5.80

## SET IDLE AUXILIARY SPRING

Contr.-rod trav.mm: 2.00

## TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1030  
C-rod trav.mm : 14.50...14.70  
2nd speed 1/min : 925  
C-rod trav.mm : 15.10...15.30  
3rd speed 1/min : 830  
C-rod trav.mm : 15.70...15.90

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

## 1st version

Setting  
Speed 1/min : 600  
Pressure hPa : 800  
Contr.-rod trav.mm: 14.70...14.90

## Measurement

Speed 1/min : 600

1st pressure hPa : 350  
C-rod trav.mm : 12.20...12.40  
2nd pressure hPa : 550  
C-rod trav.mm : 13.70...13.90  
3rd pressure hPa : 1000  
C-rod trav.mm : 15.00...15.20  
4th pressure hPa : 1100  
C-rod trav.mm : 15.40...15.60

## FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1250  
Speed 1/min : 1030  
Del.quantity cm3/ : 221.0...223.0  
1000H.: (218.0...226.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1250  
Speed 1/min : 800  
Del.quantity cm3/ : 237.0...241.0  
1000H.: (234.0...244.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 134.0...136.0  
1000H.: (131.0...139.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 13.50  
Speed 1/min : 1070...1080

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...260.0  
1000H.: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

O

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MWM 28,8 D1  
Edition : 12.11.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 402 678 806  
Injection pump  
Pump designation : PE8P120A520/SRS7145  
EP type number : 0 412 628 822  
Governor  
Governor design. : RSUV325...1150POA358  
Governor no. : 0 421 829 106

Customer-spec. information  
Customer : MWM

Engine : TBD234V16

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Calibrating nozzle-holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

N06

Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 1- 2- 3- 4- 7- 8-  
5- 6

SD ang. spacing°CS: 0-30-90-120-225-255-  
315-345  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 800  
Contr.-rod trav.mm: 14.90...15.01  
Del.quantity cm3/ : 26.0...26.2  
100H.: (25.7...26.5)  
Dispersion cm3/ : 0.5  
100H.: (0.9)

2nd speed 1/min: 325.0  
Contr.-rod trav. m: 6.0...6.2  
Del.quantity cm3/ : 3.0...4.0  
100H.: (2.7...4.3)  
Dispersion cm3/ : 0.6  
100H.: (1.0)  
3rd speed 1/min: 1100  
Contr.-rod trav.mm: 6.90...7.10  
Del.quantity cm3/ : 1.0...6.0 \*  
100H.: (-)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : 4.00

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 50...58

Testing:  
1st c-rod trav.mm : 13.90  
Speed 1/min : 1190...1200  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1280...1310  
4th speed 1/min : 1440  
C-rod trav.mm : 0.30...1.40

LOWEST RATED SPEED I  
Control-lever

position degrees: 16...24  
Setting point w/out aux. spring  
Speed 1/min : 325  
Contr.-rod trav.mm: 5.6  
Speed 1/min : 325  
C-rod trav.mm : 5.50...5.70  
C-rod trav.mm : 2.00  
Speed 1/min : 420...480

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 500  
Pressure hPa : 900  
Contr.-rod trav.mm: 14.90...15.00

Measurement  
Speed 1/min : 500  
1st pressure hPa : -  
C-rod trav.mm : 9.30...9.50  
2nd pressure hPa : 625  
C-rod trav.mm : 14.70...14.80  
3rd pressure hPa : 250  
C-rod trav.mm : 11.30...11.50

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 13.90  
Speed 1/min : 1190...1200

#### LOW IDLE

Speed 1/min : 325  
Contr.-rod trav.mm: 6.00...6.20  
Del.quantity cm3/ : 30.0...40.0  
1000H.: (27.0...43.0)  
Dispersion cm3/ : 6.00  
1000H.: (10.00)

Remarks:

Pump runs in tandem

Full-load delivery not known. Set  
according to engine test report.

N07

\* = Element disconnected at idle for  
cylinders 2, 4, 6 and 8  
Hydraulic latching of starting  
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.35 bar...0.45 bar.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 14,7 G 3  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
  
Combination no. : 0 402 678 808  
  
Injection pump  
Pump designation : PE8P120A32OLS7801-2  
EP type number : 0 412 628 825  
Governor  
Governor design. : RSV350...1050POA535  
Governor no. : 0 421 833 281

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442LA  
  
1st version kW : 320.0  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Calibrating nozzle-holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Perforated-plate  
diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (4.15...5.35)  
Contr.-rod trav.mm: 9.00...12.00  
Cam sequence : 8- 7- 2- 6- 3- 5-  
                  4- 1

SD ang. spacing°CS: 0-45-90-135-180-225-  
  270-315  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 8

## BASIC SETTING

1st speed 1/mi: 600  
-----  
Contr.-rod trav.mm: 14.50...14.60  
-----  
Del.quantity cm3/ : 21.5...21.8  
-----  
100H.: (21.2...22.1)  
-----  
Dispersion cm3/ : 0.5  
-----  
100H.: (0.9)  
-----

2nd speed 1/min: 350.0  
Contr.-rod trav. m: 5.6...5.8  
Del.quantity cm3/ : 1.6...2.2  
100H.: (1.3...2.5)  
Dispersion cm3/ : 0.8  
100H.: (1.2)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Cont.-rod travelmm: 0.30...0.70

Governor-spring reload  
Notch setting x : ?

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 600  
Charge press. hPa : 750  
Del.quantity cm3/ : 215.0...218.0  
1000H.: (212.0...221.0)  
Dispersion cm3/ : 5.00  
1000H.: (9.00)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 36...44

Testing:  
1st c-rod trav.mm : 14.20  
Speed 1/min : 1070...1080  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1130...1160  
4th speed 1/min : 1400  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 13...21  
Setting point w/out aux. spring  
Speed 1/min : 350  
Contr.-rod trav.mm: 5.7

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 19.50  
Speed 1/min : 350  
C-rod trav.mm : 5.60...5.80  
C-rod trav.mm : 2.00  
Speed 1/min : 360...420

SET IDLE AUXILIARY SPRING  
Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1030  
C-rod trav.mm : 15.20...15.30  
2nd speed 1/min : 850  
C-rod trav.mm : 15.70...15.90  
3rd speed 1/min : 925  
C-rod trav.mm : 15.40...15.60

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

1st version  
Setting  
Speed 1/min : 600  
Pressure hPa : 750  
Contr.-rod trav.mm: 14.50...14.60

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
C-rod trav.mm : 12.20...12.40  
2nd pressure hPa : 550  
C-rod trav.mm : 13.70...13.90  
3rd pressure hPa : 950  
C-rod trav.mm : 14.90...15.10  
4th pressure hPa : 1050  
C-rod trav.mm : 15.30...15.50

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Charge press. hPa : 1250  
Speed 1/min : 1030  
Del.quantity cm3/ : 230.0...232.0  
1000H.: (227.0...235.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : 1250  
Speed 1/min : 850  
Del.quantity cm3/ : 242.0...245.0  
1000H.: (239.0...248.0)  
Dispersion cm3/ : 8.00  
1000H.: (12.0)  
Charge press. hPa : -  
Speed 1/min : 500  
Del.quantity cm3/ : 147.0...149.0  
1000H.: (144.0...152.0)  
Dispersion cm3/ : 8.00  
1000H.: (-)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than

full-load trav.mm: 14.20  
Speed 1/min : 1070...1080

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 240.0...260.0  
1000H.: (236.0...264.0)

Remarks:

:

Observe VDT-I-420/120

0



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 12.2 B  
 Edition : 20.11.87  
 Superceeded : 1.9.87  
 Calibrating oil : ISO-4113  
 Combination no. : 0 402 746 809  
 Injection pump  
 Pump designation : PES6P120A720RS7132  
 EP type number : 0 412 726 806  
 Governor  
 Governor design. : RQ750PA836  
 Governor no. : 0 421 801 373

Customer-spec. information  
 Customer : PERKINS

Engine : EAGLE LE

1st version kW : 240.0  
 Speed 1/min: 1500

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Perforated-plate  
 diameter mm : 0,8

Test inj. tubing : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

START OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Contr.-rod trav.mm: 9.00...12.00  
 Cam sequence : 1- 4- 2- 6- 3- 5

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 700  
 Contr.-rod trav.mm: 15.90...16.00  
 Del.quantity cm3/ : 33.9...34.1  
 100H.: (33.6...34.4)  
 Dispersion cm3/ : 0.5  
 100H.: (0.9)

2nd speed 1/min: 300.0  
 Contr.-rod trav. m: 5.9...6.1  
 Del.quantity cm3/ : 3.8...4.4  
 100H.: (3.5...4.7)  
 Dispersion cm3/ : 0.8  
 100H.: (1.2)

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
 Speed 1/min: 700  
 Del.quantity cm3/ : 339.0...341.0  
 1000H.: (336.0...344.0)  
 Dispersion cm3/ : 5.00  
 1000H.: (9.00)

## HIGHEST RATED SPEED

1st version  
 Control-lever  
 position degrees: 27...35

Testing:  
 1st c-rod trav.mm : 14.90  
 Speed 1/min : 750...755  
 2nd c-rod trav.mm : 4.00  
 Speed 1/min : 785...795  
 4th speed 1/min : 820  
 C-rod trav.mm : 0.00...1.00

## ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 14.90  
Speed 1/min : 750...755

STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 210.0...240.0  
Contr.-rod trav.mm: 20.00...21.00

Remarks:  
APPLICATION :  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 6,0 D 13  
Edition : 07.12.87  
Superceeded : -  
Calibrating oil : ISO-4113  
Combination no. : 0 403 446 179  
Injection pump  
Pump designation : PES5MW100/72ORS1139  
EP type number : 0 413 406 134  
Governor  
Governor design. : RQV300...1300MW74  
Governor no. : 0 420 083 112

Customer-spec. information  
Customer : DB

Engine : OM366LA

1st version kW : 170.0  
Speed 1/min: 2600

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter  
x Wall thickness : 6.00x1.50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed 1/mi: 1300

Contr.-rod trav.mm: 11.00...11.10

Del.quantity cm3/ : 7.6...7.8

100H.: (7.0...8.0)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 300

Contr.-rod trav. m: 7.8...7.9

Del.quantity cm3/ : 1.0...1.4

100H.: (0.9...1.5)

Dispersion cm3/ : 0.3

100H.: (0.5)

(B) Setting of injection pump with  
externally-mounted governor

## SLEEVE TRAVELS

1st speed 1/min: 1340

Sleeve travel mm: 8.50...8.70

2nd speed 1/min: 1450

Sleeve travel mm: 9.50...9.70

3rd speed 1/min: 700

Sleeve travel mm: 3.90...4.50

4th speed 1/min: 300

Sleeve travel mm: 1.30...1.70

## SLEEVE POSITION

Control-lever position

Degree: -1

Speed 1/min: 1335

Contr.-rod travelmm: 15.20...17.80

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1300

Del.quantity cm3/ : 76.0...78.0

1000H.: (74.0...80.0)

Dispersion cm3/ : 3.5

1000H.: (6.0)

## HIGHEST RATED SPEED

1st version

Control-lever  
position degrees: 50...58

Testing:  
1st c-rod trav.mm : 10.00  
Speed 1/min : 1340...1350  
2nd c-rod trav.mm : 4.0  
Speed 1/min : 1425...1455  
4th speed 1/min : 1550  
C-rod trav.mm : 0.00...1.00

LOWEST RATED SPEED I  
Control-lever  
position degrees: 18...26  
Setting point w/out aux. spring  
Speed 1/min : 300  
Contr.-rod trav.mm: 7.8

Testing:  
Speed 1/min : 100  
C-rod trav.mm min : 9.70  
Speed 1/min : 300  
C-rod trav.mm : 7.80...7.90

CONSTANT REGULATION  
Speed 1/min : 330...600

TORQUE CONTROL  
Torque-control curve - 1st version  
1st speed 1/min : 1300  
C-rod trav.mm : 11.00...11.10  
2nd speed 1/min : 750  
C-rod trav.mm : 11.70...11.80  
3rd speed 1/min : 1125  
C-rod trav.mm : 11.40...11.50

#### SWITCH-OVER POINT

Speed 1/min : 230 (250)

#### FUEL-DELIVERY CHARACTERISTICS

1st version  
Speed 1/min : 750  
Del.quantity cm3/ : 68.0...70.0  
1000H.: (65.0...73.0)  
Dispersion cm3/ : 5.0  
1000H.: (7.0)

#### ROTATIONAL-SPEED LIMITATION

1st version  
1mm control-rod travel less than  
full-load trav.mm: 10.00  
Speed 1/min : 1340...1350

#### STARTING FUEL DELIVERY

N13

Speed 1/min : 100  
Del.quantity cm3/ : 80.0...90.0  
1000H.: (77.0...93.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 300  
Contr.-rod trav.mm: 7.80...7.90  
Del.quantity cm3/ : 10.0...14.0  
1000H.: (9.0...15.0)  
Dispersion cm3/ : 3.50  
1000H.: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 J 1  
Edition : 06.11.87  
Superceeded : 4.3.87  
Calibrating oil : ISO-4113  
  
Combination no. : 9 400 230 046  
  
Injection pump  
Pump designation : PES6A9SD410RS2561  
EP type number : 9 410 230 006  
Governor  
Governor design. : RSV600...1100A2C2048  
-1L  
Governor no. : 9 420 234 157  
  
Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 110.0  
Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp, °C : 38...42

Overflow valve : 1 413 385 007

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
: (1.80...2.00)

Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 9.90...10.00

Del.quantity cm3/ : 9.1...9.3

100H.: (8.9...9.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 600.0

Contr.-rod trav. m: 5.0...5.2

Del.quantity cm3/ : 1.2...1.6

100H.: (0.9...1.8)

Dispersion cm3/ : 0.3

100H.: (0.5)

#### SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 91.0...93.0

1000H.: (89.0...95.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 44...52

Testing:

1st c-rod trav.mm : 8.90

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1195...1225

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 24...32

Setting point w/out aux. spring

Speed 1/min : 600

Contr.-rod trav.mm: 4.6

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 600

C-rod trav.mm : 5.00...5.20

C-rod trav.mm : 2.00

Speed 1/min : 710...770

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 9.90...10.00

2nd speed 1/min : 950

C-rod trav.mm : 10.70...10.90

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 950

Del.quantity cm3/ : 104.0...108.0

1000H.: (101.5...110.5)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 8.90

Speed 1/min : 1145...1155

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 155.0...175.0

1000H.: (150.0...180.0)

Contr.-rod trav.mm: 19.00...21.00

#### HIGH IDLE

1st version

Speed 1/min : 1200

Contr.-rod trav.mm: 4.70...4.90

#### LOW IDLE

Speed 1/min : 600

Contr.-rod trav.mm: 5.00...5.20

Del.quantity cm3/ : 12.0...16.0

1000H.: (9.5...18.5)

Dispersion    cm<sup>3</sup>/ : 3.50  
1000H.: (5.50)

Remarks:

: JOHN DEERE  
: # RE 10472

Adjustment without torque-control  
spring retainer with 1 mm less  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1. rque-control  
pring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 J  
 Edition : 06.11.87  
 Superceeded : 7.86  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 047  
 Injection pump  
 Pump designation : PES6A95D41ORS2561  
 EP type number : 9 410 230 006  
 Governor  
 Governor design. : RSV600...1100A2C2049  
 -1L  
 Governor no. : 9 420 234 158

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466TH-02

1st version kW : 125.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 413 385 007

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 9 681 271 001

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300  
 Tolerance + - <sup>0</sup> : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 10.60...10.70

Del.quantity cm3/ : 10.7...10.9

100H.: (10.5...11.1)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 600.0

Contr.-rod trav. m: 4.9...5.1

Del.quantity cm3/ : 1.2...1.6

100H.: (0.9...1.8)

Dispersion cm3/ : 0.3

100H.: (0.5)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Cont.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Del.quantity cm3/ : 107.0...109.0

1000H.: (105.0...111.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 43...51

Testing:

1st c-rod trav.mm : 9.60

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1200...1230

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40



#### LOWEST RATED SPEED I

Control-lever  
position degrees: 24...32  
Setting point w/out aux. spring  
Speed 1/min : 600  
Contr.-rod trav.mm: 4.5

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 600  
C-rod trav.mm : 4.40...4.60  
C-rod trav.mm : 2.00  
Speed 1/min : 705...765

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1100  
C-rod trav.mm : 10.60...10.70  
2nd speed 1/min : 950  
C-rod trav.mm : 11.50...11.70

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 950  
Del.quantity cm3/ : 120.0...124.0  
1000H.: (118.5...125.5)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than

full-load trav.mm: 9.60  
Speed 1/min : 1145...1155

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 155.0...175.0  
1000H.: (150.0...180.0)  
Contr.-rod trav.mm: 19.00...21.00

#### HIGH IDLE

##### 1st version

Speed 1/min : 1200  
Contr.-rod trav.mm: 4.70...4.90

#### LOW IDLE

Speed 1/min : 600  
Contr.-rod trav.mm: 4.90...5.10  
Del.quantity cm3/ : 12.0...16.0  
1000H.: (9.5...18.5)

Dispersion cm3/ : 3.50  
1000H.: (5.50)

#### Remarks:

: JOHN DEERE  
: # RE28881

Adjustment without torque-control  
spring retainer with 1 mm less  
Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1. rque-control  
pring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet :  
Edition : 06.11.87  
Superceeded :  
Calibrating oil : ISO-4113  
  
Combination no. : 9 400 230 055  
  
Injection pump  
Pump designation : PES6A95D320LS2647  
EP type number : 9 410 230 020  
Governor  
Governor design. : RSV375...1050A2C2034  
-3R  
Governor no. : 9 420 234 152  
  
Customer-spec. information  
Customer : J.I. CASE  
  
Engine : A504 BDT  
  
1st version kW : 163.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42  
  
Overflow valve : 0 681 273 009  
  
Inlet press., bar : 1.50  
  
Calibrating nozzle-holder  
assembly : 0 681 343 009  
  
Opening  
pressure, bar : 172...175  
  
Test inj. tubing : 9 681 271 020  
  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar : 27...29  
  
Prestroke mm : 2.55...2.65  
: (2.50...2.70)  
Contr.-rod trav.mm: 10.50...10.50

Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/m<sup>3</sup>: 1050  
-----  
Contr.-rod trav.mm: 13.40...13.50  
-----  
Del.quantity cm<sup>3</sup>/ : 14.9...15.1  
-----  
100H.: (14.7...15.3)  
-----  
Dispersion cm<sup>3</sup>/ : 0.3  
-----  
100H.: (0.6)  
-----  
2nd speed 1/min: 375.0  
Contr.-rod trav. m: 5.4...5.6  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100H.: (1.4...2.5)  
Dispersion cm<sup>3</sup>/ : 0.3  
100H.: (0.5)

## SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed 1/min: 800  
Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version  
Speed 1/min: 1050  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000H.: (147.0...153.0)  
Dispersion cm<sup>3</sup>/ : 3.50  
1000H.: (6.00)

## HIGHEST RATED SPEED

1st version  
Control-lever  
position degrees: 44...52

Setting point:  
Speed 1/min : 800  
Contr.-rod trav.mm: 0.5

## Testing:

1st c-rod trav.mm : 11.90  
Speed 1/min : 1090...1100  
2nd c-rod trav.mm : 4.00  
Speed 1/min : 1160...1190

3rd c-rod trav.mm : 4.00  
4th speed 1/min : 1250  
C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever  
position degrees: 20...28  
Setting point w/out aux. spring  
Speed 1/min : 375  
Contr.-rod trav.mm: 5.5

#### Testing:

Speed 1/min : 100  
C-rod trav.mm min : 19.00  
Speed 1/min : 375  
C-rod trav.mm : 5.40...5.60  
C-rod trav.mm : 2.00  
Speed 1/min : 535...595

#### TORQUE CONTROL

Torque-control curve - 1st version  
1st speed 1/min : 1050  
C-rod trav.mm : 13.40...13.50  
2nd speed 1/min : 750  
C-rod trav.mm : 14.10...14.50

#### FUEL-DELIVERY CHARACTERISTICS

##### 1st version

Speed 1/min : 750  
Del.quantity cm3/ : 152.5...161.5  
1000H.: (151.5...163.5)

#### ROTATIONAL-SPEED LIMITATION

##### 1st version

1mm control-rod travel less than  
full-load trav.mm: 11.90  
Speed 1/min : 1090...1100

#### MIDDLE RATED SPEED

Contr.-rod trav.mm: 4.00

#### STARTING FUEL DELIVERY

Speed 1/min : 100  
Del.quantity cm3/ : 135.0...155.0  
1000H.: (130.0...160.0)  
Contr.-rod trav.mm: 19.00...21.00

#### LOW IDLE

Speed 1/min : 375  
Contr.-rod trav.mm: 5.40...5.60  
Del.quantity cm3/ : 16.5...22.5  
1000H.: (14.0...25.0)

Dispersion cm3/ : 3.50  
1000H.: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 8,3 G 4  
Edition : 06.11.87  
Superceeded : 7.86  
Calibrating oil : ISO-4113

Combination no. : 9 400 230 056

Injection pump  
Pump designation : PES6A95D32OLS2647  
EP type number : 9 410 230 020  
Governor  
Governor design. : RSV375...1050A2C2034  
-4R  
Governor no. : 9 420 234 153

Customer-spec. information  
Customer : J.I. CASE

Engine : A504BDT

1st version kW : 148.5  
Speed 1/min: 2100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
inlet temp. °C : 38...42

Overflow valve : 9 681 273 009

Inlet press., bar : 1.50

Calibrating nozzle-holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test inj. tubing : 9 681 271 020

Outside diameter  
x Wall thickness  
x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set constant delivery quant.  
per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.75...2.85  
: (2.70...2.90)

Contr.-rod trav.mm: 10.50...10.50  
Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing<sup>o</sup>CS: 0-60-120-180-240-300  
Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

#### BASIC SETTING

1st speed 1/mi: 1050

Contr.-rod trav.mm: 11.80...11.90

Del.quantity cm3/ : 12.7...12.9

100H.: (12.5...13.1)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 375.0

Contr.-rod trav. m: 4.9...5.1

Del.quantity cm3/ : 1.4...2.0

100H.: (1.1...2.2)

Dispersion cm3/ : 0.3

100H.: (0.5)

#### SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

#### FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1050

Del.quantity cm3/ : 127.5...129.5

1000H.: (125.5...131.5)

Dispersion cm3/ : 3.50

1000H.: (6.00)

#### HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 42...50

Testing:

1st c-rod trav.mm : 10.80

Speed 1/min : 1080...1100

2nd c-rod trav.mm : 4.00

Speed 1/min : 1165...1185

4th speed 1/min : 1250

C-rod trav.mm : 0.30...1.40

#### LOWEST RATED SPEED I

Control-lever

position degrees: 20...28

Setting point w/out aux. spring

Speed 1/min : 375

Contr.-rod trav.mm: 5.0

Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 375

C-rod trav.mm : 4.90...5.10

C-rod trav.mm : 2.00

Speed 1/min : 510...570

#### SET IDLE AUXILIARY SPRING

Speed 1/min : 1200

Contr.-rod trav.mm: 2.00

#### TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1050

C-rod trav.mm : 11.80...11.90

2nd speed 1/min : 750

C-rod trav.mm : 12.00...12.20

3rd speed 1/min : 600

C-rod trav.mm : 12.10...12.30

#### FUEL-DELIVERY CHARACTERISTICS

1st version

Speed 1/min : 750

Del.quantity cm3/ : 129.0...133.0

1000H.: (127.0...135.0)

#### ROTATIONAL-SPEED LIMITATION

1st version

1mm control-rod travel less than

full-load trav.mm: 10.80

Speed 1/min : 1080...1100

#### STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 12.0...16.0

1000H.: (11.0...17.0)

Contr.-rod trav.mm: 21.00...21.00

#### LOW IDLE

Speed 1/min : 375

Contr.-rod trav.mm: 4.90...5.10

Del.quantity cm3/ : 14.0...20.0

1000H.: (11.5...22.5)

Dispersion    cm<sup>3</sup>/ : 3.50  
                 1000H.: (5.50)

Remarks:

:

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 H 2  
 Edition : 06.11.87  
 Superceeded : 7.86  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 066  
 Injection pump  
 Pump designation : PES6A100D41ORS2676  
 EP type number : 9 410 230 023  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -1L  
 Governor no. : 9 420 234 133

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 120.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 9.40...9.40

Del.quantity cm3/ : 9.9...10.1

100H.: (9.7...10.3)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 425.0

Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/ : 2.1...2.5

100H.: (1.8...2.7)

Dispersion cm3/ : 0.7

100H.: (0.9)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Charge press. hPa : 450

Del.quantity cm3/ : 99.0...101.0

1000H.: (97.0...103.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 46...54

Testing:

1st c-rod trav.mm : 8.40

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1195...1225

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40

## LOWEST RATED SPEED I

Control-lever

position degrees: 24...32

Setting point w/out aux. spring

Speed 1/min : 425

Contr.-rod trav.mm: 4.9

### Testing:

Speed 1/min : 100

C-rod trav.mm min : 19.00

Speed 1/min : 425

C-rod trav.mm : 4.30...5.50

C-rod trav.mm : 2.00

Speed 1/min : 600...660

## TORQUE CONTROL

Torque-control curve - 1st version

1st speed 1/min : 1100

C-rod trav.mm : 9.40...9.40

2nd speed 1/min : 750

C-rod trav.mm : 10.60...10.80

Adjustment test, manifold-pressure  
compensator (LDA,ADA,ALDA)

### 1st version

Setting

Speed 1/min : 500

Pressure hPa : 173

Contr.-rod trav.mm: 10.30...10.40

### Measurement

Speed 1/min : 500

1st pressure hPa : -

C-rod trav.mm : 9.10...9.30

2nd pressure hPa : 80

C-rod trav.mm : 9.40...9.80

## FUEL-DELIVERY CHARACTERISTICS

### 1st version

Charge press. hPa : 450

Speed 1/min : 750

Del.quantity cm3/ : 116.0...119.0

1000H.: (113.5...121.5)

Charge press. hPa : -

Speed 1/min : 500

Del.quantity cm3/ : -

1000H.: (84.0...92.0)

Charge press. hPa : -

Speed 1/min : 750

Dispersion cm3/ : 4.00

1000H.: (4.00)

## ROTATIONAL-SPEED LIMITATION

N25

### 1st version

1mm control-rod travel less than

full-load trav.mm: 8.40

Speed 1/min : 1145...1155

## STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/ : 190.0...210.0

1000H.: (185.0...215.0)

Contr.-rod trav.mm: 19.00...21.00

## HIGH IDLE

### 1st version

Speed 1/min : 1195

Contr.-rod trav.mm: 4.70...4.90

## LOW IDLE

Speed 1/min : 425

Contr.-rod trav.mm: 5.30...5.50

Del.quantity cm3/ : 21.0...25.0

1000H.: (18.5...27.5)

Dispersion cm3/ : 7.00

1000H.: (9.00)

### Remarks:

: JOHN DEERE #

: 23746

Adjustment without torque-control  
spring retainer with 1 mm less

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1. rque-control  
pring retainer.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : DEE 7,6 H  
 Edition : 06.11.87  
 Superceeded : 7.86  
 Calibrating oil : ISO-4113  
 Combination no. : 9 400 230 067  
 Injection pump  
 Pump designation : PES6A100D410RS2676  
 EP type number : 9 410 230 023  
 Governor  
 Governor design. : RSV425...1100A2C2161  
 -2L  
 Governor no. : 9 420 234 100

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466A

1st version kW : 141.0  
 Speed 1/min: 2200

## TEST BENCH REQUIREMENTS

Calibrating-oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Calibrating nozzle-holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set constant delivery quant.  
 per values -----

## START OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
 : (2.40...2.60)

Contr.-rod trav.mm: 10.50...10.50  
 Cam sequence : 1- 5- 3- 6- 2- 4

SD ang. spacing°CS: 0-60-120-180-240-300  
 Tolerance + - : 0.50 (0.75)

SD mark cyl. no. : 1

## BASIC SETTING

1st speed 1/mi: 1100

Contr.-rod trav.mm: 10.20...10.30

Del.quantity cm3/ : 11.1...11.3

100H.: (10.9...11.5)

Dispersion cm3/ : 0.3

100H.: (0.6)

2nd speed 1/min: 425.0

Contr.-rod trav. m: 5.8...6.0

Del.quantity cm3/ : 2.4...2.8

100H.: (2.1...3.0)

Dispersion cm3/ : 0.7

100H.: (0.9)

## SLEEVE POSITION

Control-lever position

Degree: -3

Speed 1/min: 800

Contr.-rod travelmm: 0.30...0.70

## FULL-LOAD DELIV. AT FULL-LOAD STOP

1st version

Speed 1/min: 1100

Charge press. hPa : 500

Del.quantity cm3/ : 111.0...113.0

1000H.: (109.0...115.0)

Dispersion cm3/ : 3.50

1000H.: (6.00)

## HIGHEST RATED SPEED

1st version

Control-lever

position degrees: 43...51

Testing:

1st c-rod trav.mm : 9.20

Speed 1/min : 1145...1155

2nd c-rod trav.mm : 4.00

Speed 1/min : 1190...1220

4th speed 1/min : 1300

C-rod trav.mm : 0.30...1.40